**Super Runner and Super Marathon Series**

# Dean Millivolt Gas Fryers

## Service & Parts Manual

DEAN

NON-CE &

CFESA
Commercial Food Equipment Service Association

Dean, a member of the Commercial Food Equipment Service Association, recommends using CFESA Certified Technicians.


**24-Hour Service Hotline**
**1-800-551-8633**
**Email:** service@frymaster.com

www.frymaster.com



**NOVEMBER 2005**
*8195948*

**Please read all sections of this manual and retain for future reference.**

**NOTICE**

**This appliance is intended for professional use only and is to be operated by qualified personnel only. A Dean Factory Authorized Service Center (FASC) or other qualified professional should perform installation, maintenance, and repairs. Installation, maintenance, or repairs by unqualified personnel may void the manufacturer's warranty.**

**NOTICE**

**This equipment must be installed in accordance with the appropriate national and local codes of the country and/or region in which the appliance is installed.**

**NOTICE**

**Drawings and photos used in this manual are intended to illustrate operational, cleaning and technical procedures and may not conform to onsite management operational procedures.**

**NOTICE**

**IF, DURING THE WARRANTY PERIOD, THE CUSTOMER USES A PART FOR THIS ENODIS EQUIPMENT OTHER THAN AN UNMODIFIED NEW OR RECYCLED PART PURCHASED DIRECTLY FROM FRYMASTER DEAN, OR ANY OF ITS AUTHORIZED SERVICE CENTERS, AND/OR THE PART BEING USED IS MODIFIED FROM ITS ORIGINAL CONFIGURATION, THIS WARRANTY WILL BE VOID. FURTHER, FRYMASTER DEAN AND ITS AFFILIATES WILL NOT BE LIABLE FOR ANY CLAIMS, DAMAGES OR EXPENSES INCURRED BY THE CUSTOMER WHICH ARISE DIRECTLY OR INDIRECTLY, IN WHOLE OR IN PART, DUE TO THE INSTALLATION OF ANY MODIFIED PART AND/OR PART RECEIVED FROM AN UNAUTHORIZED SERVICE CENTER.**

**⚠ DANGER**

**Improper installation, adjustment, maintenance or service, and unauthorized alterations or modifications can cause property damage, injury, or death. Read the installation, operating and service instructions thoroughly before installing or servicing this equipment. Only qualified service personnel may convert this appliance to use a gas other than that for which it was originally configured.**

**⚠ DANGER**

**Adequate means must be provided to limit the movement of this appliance without depending upon the gas line connection. Single fryers equipped with legs must be stabilized by installing anchor straps. All fryers equipped with casters must be stabilized by installing restraining chains. If a flexible gas line is used, an additional restraining cable must be connected at all times when the fryer is in use.**

**⚠ DANGER**

**The front ledge of the fryer is not a step. Do not stand on the fryer. Serious injury can result from slips or contact with the hot oil.**

**⚠ DANGER**

**Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other cooking appliance.**

**⚠ DANGER**

**Instructions explaining procedures to be followed MUST be posted in a prominent location in the event the operator detects a gas leak. This information can be obtained from the local gas company or gas supplier.**

**⚠ DANGER**

**The crumb tray in fryers equipped with a filter system must be emptied into a fireproof container at the end of frying operations each day. Some food particles can spontaneously combust if left soaking in certain shortening material. Additional information can be obtained in the filtration manual included with the system.**

**⚠ WARNING**

**No structural material on the fryer should be altered or removed to accommodate placement of the fryer under a hood. Questions? Call the Dean Service Hotline at 1-800-551-8633.**

**⚠ WARNING**

**Do not bang fry baskets or other utensils on the fryer's joiner strip. The strip is present to seal the joint between the frypot. Banging fry baskets on the strip to dislodge shortening will distort the strip, adversely affecting its fit. It is designed for a tight fit and should only be removed for cleaning.**

IMPORTANT

**Safe and satisfactory operation of Dean equipment depends upon its proper installation. Installation MUST conform with local codes, or in the absence of local codes, to European Community (CE) Standards.**

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# DEAN MILLIVOLT GAS FRYERS
# CHAPTER 1: SERVICE PROCEDURES

## 1.1 Functional Description

Dean Super Runner and Super Marathon Series fryers are millivolt fryers, which require no electricity to operate (systems with built-in filtration and/or other accessories will require electric power). Dean millivolt fryers contain a welded steel frypot (stainless or cold-rolled) that is heated by gas flames diffused evenly through tubes built into the frypot. The number of tubes varies from three to five, according to the fryer model and size.

Flames originate from orifices in a burner manifold positioned beneath cast-iron burners. The burners are positioned in the tube openings, at the front of the frypot. Diffusers within each tube distribute the flame evenly throughout the tube. The diameter of the orifices differs for natural (CE:G20/G25) and LP (CE:G31) gas as indicated in the accompanying table.

**NON-CE (Altitudes of 2000 feet or less)**

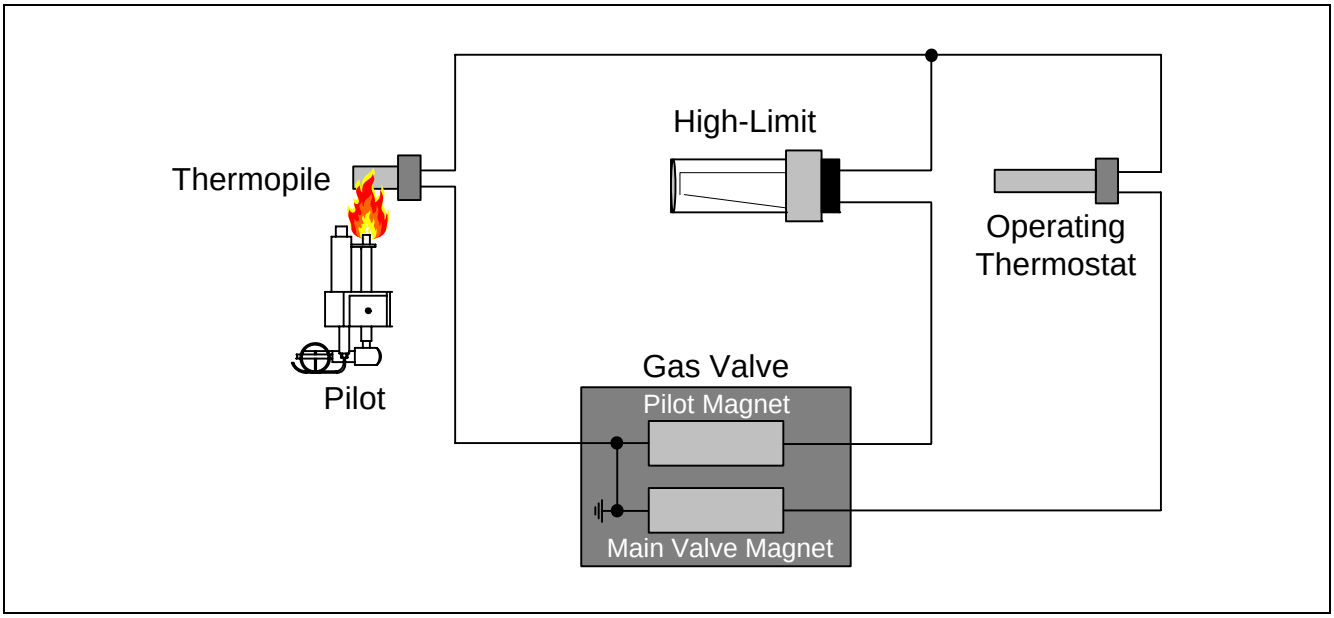
| MODEL | INPUT (BTU) | GAS TYPE | ORIFICE MM (INCH) | ORIFICE PART NO. | QTY | EQUIPMENT PRESSURE | |
|---|---|---|---|---|---|---|---|
| | | | | | | MBAR | INCH W.C. |
| SM20GM | 50 | NAT<br>LP | 2.18(#44)<br>1.40(#54) | 810-2050<br>810-2324 | 2<br>2 | 10<br>27.5 | 4<br>11 |
| SM 35 (40) GM<br>SR 42GM | 105 | NAT<br>LP | 2.80(#35)<br>1.70(#51) | 810-2140<br>810-2064 | 3<br>3 | 10<br>27.5 | 4<br>11 |
| SR 52 GM<br>SM 50 GM | 120 | NAT<br>LP | 2.53(#39)<br>1.51(#53) | 810-2048<br>810-2059 | 4<br>4 | 10<br>27.5 | 4<br>11 |
| SR 62 GM<br>SM 60 GM | 150 | NAT<br>LP | 2.53(#39)<br>1.51(#53) | 810-2048<br>810-2059 | 5<br>5 | 10<br>27.5 | 4<br>11 |
| SM 80 GM | 165 | NAT<br>LP | 2.58(#38)<br>1.61(#52) | 810-2062<br>810-2063 | 5<br>5 | 10<br>27.5 | 4<br>11 |

**CE ONLY (Altitudes of 2000 feet or less)**

| MODEL | INPUT (kW) | GAS TYPE | ORIFICE MM (INCH) | ORIFICE PART NO. | QTY/ COLOR | EQUIPMENT PRESSURE | |
|---|---|---|---|---|---|---|---|
| | | | | | | MBAR | INCH W.C. |
| SM20GM | 15 | G20<br>G25<br>G31 | 2,40<br>2,40<br>1,51 | 810-2060<br>810-2060<br>810-2059 | 2/BLUE<br>2/BLUE<br>2/RED | 10,0<br>15,0<br>27,0 | 4,0<br>6,0<br>10,8 |
| SM 35 (40) GM<br>SR 42GM | 26 | G20<br>G25<br>G31 | 2,40<br>2,40<br>1,51 | 810-2060<br>810-2060<br>810-2059 | 3/BLUE<br>3/BLUE<br>3/RED | 10,0<br>15,0<br>27,0 | 4,0<br>6,0<br>10,8 |
| SR 52 GM<br>SM 50 GM | 30 | G20<br>G25<br>G31 | 2,40<br>2,40<br>1,51 | 810-2060<br>810-2060<br>810-2059 | 4/BLUE<br>4/BLUE<br>4/RED | 10,0<br>15,0<br>27,0 | 4,0<br>6,0<br>10,8 |
| SR 62 GM<br>SM 60 GM | 37,5 | G20<br>G25<br>G31 | 2,40<br>2,40<br>1,51 | 810-2060<br>810-2060<br>810-2059 | 5/BLUE<br>5/BLUE<br>5/RED | 10,0<br>15,0<br>27,0 | 4,0<br>6,0<br>10,8 |
| SM 80 GM | 37,5 | G20<br>G25<br>G31 | 2,40<br>2,40<br>1,51 | 810-2060<br>810-2060<br>810-2059 | 5/BLUE<br>5/BLUE<br>5/RED | 10,0<br>15,0<br>27,0 | 4,0<br>6,0<br>10,8 |

## 1.1 Functional Description (cont.)

An electromechanical millivolt gas valve regulates gas flow to the burner manifold. Dean millivolt fryers use a pilot ignition system to control burner firing.




Functional diagram of a typical millivolt system.

### Pilot Ignition System

The pilot ignition system is made up of the pilot orifice, pilot hood, and a thermopile or thermocouple. The pilot serves two purposes: lighting the burner and heating the thermopile/ thermocouple. In operation, the thermopile/thermocouple is in contact with the pilot flame and generates millivolts. The millivolt output passes through a normally closed high-limit switch and energizes the gas valve pilot coil, which in turn opens the pilot valve. If the pilot flame is extinguished, voltage is lost to the gas valve pilot coil and the pilot valve closes.

### Thermostats

Dean millivolt fryers are equipped with adjustable ***operating thermostats***. The temperature at which the thermostat opens and closes is adjusted by turning a knob.

Dean millivolt fryers are also equipped with a ***high-limit thermostat***. In the event that the fryer fails to properly control the oil temperature, the high-limit thermostat prevents the fryer from overheating to the flash point. The high-limit thermostat acts as a normally closed power switch that opens when exposed to temperatures above 410ºF (210°C) for CE fryers and 435-450ºF (224-232°C) for non-CE fryers. Once opened, the high limit must be manually reset before operating the fryer.

## 1.2 Accessing Fryers for Servicing

**⚠ DANGER**
**Moving a fryer filled with cooking oil may cause spilling or splattering of the hot liquid.**

1. Drain all cooking oil from the fryer.
2. Shut off the gas supply to the unit and disconnect the unit from the gas supply.
3. Remove any attached restraining devices.

**⚠ DANGER**
**Fryers must be at room temperature, empty of oil, and if fitted with legs, lifted during movement to avoid damage and possible bodily injury.**

**⚠ DANGER**
**Hot shortening can cause severe burns. Avoid contact. Under all circumstances, oil must be removed from the fryer before attempting to move it to avoid oil spills, and the falls and severe burns that could occur. This fryer may tip and cause personal injury if not secured in a stationary position.**

4. Relocate the fryer for service accessibility. If fryer is equipped with legs, lift the fryer to relocate it. Damage to the leg or leg support channel can result if the fryer is not lifted when moving.
5. After servicing is complete, reconnect the unit to the gas supply and reattach the restraining devices.
6. Refill the frypot with cooking oil.

## 1.3 Cleaning the Gas Valve Vent Tube

1. Set the fryer power switch and the gas valve to the "OFF" position.
2. Carefully unscrew the vent tube from the gas valve. **NOTE:** The vent tube may be straightened for ease in removal.
3. Pass a piece of ordinary binding wire through the tube to remove any obstruction. Remove the wire and blow through the tube to ensure it is clear.
4. Reinstall tube and bend so that the opening is pointing downward.

## 1.4 Calibrating the Operating Thermostat

1. Ensure the frypot is filled to the proper level with oil before proceeding.

2. Light the pilot.

3. Set the temperature control knob to 350°F (177°C).

4. Let the burners cycle on and off automatically three times in order for the oil temperature to become uniform. If using solid shortening, stir to get all shortening in the bottom of the frypot melted.

5. Insert a good-grade thermometer or pyrometer probe into the oil, with the end near the fryer temperature-sensing bulb.

   NOTE: The temperature-sensing probe is mounted on the frypot tube.

6. When the burner starts for the fourth time, the thermometer/pyrometer reading should be within the range 335-360°F (168-182°C). If not, calibrate as follows:

   a. Remove the thermostat knob by pulling straight out on the knob with a firm, steady pull. The temperature adjusting screw is located in the middle of the thermostat shaft.

   b. Insert a small-bladed flat-tipped screwdriver into the adjusting screw. Turn the adjusting screw in ¼-turn increments to adjust the temperature. Turning the screw clockwise decreases the temperature; turning it counter-clockwise increases the temperature. DO NOT allow the thermostat shaft to turn while turning the adjusting screw.

   c. Recheck the thermometer/pyrometer reading the next time the burner comes on.

   d. Repeat steps 4.b through 4.c until the thermometer/pyrometer reading remains within the range 335-360°F (168-182°C) through several cycles. If the thermostat cannot be calibrated, call a Factory Authorized Service Center for service.

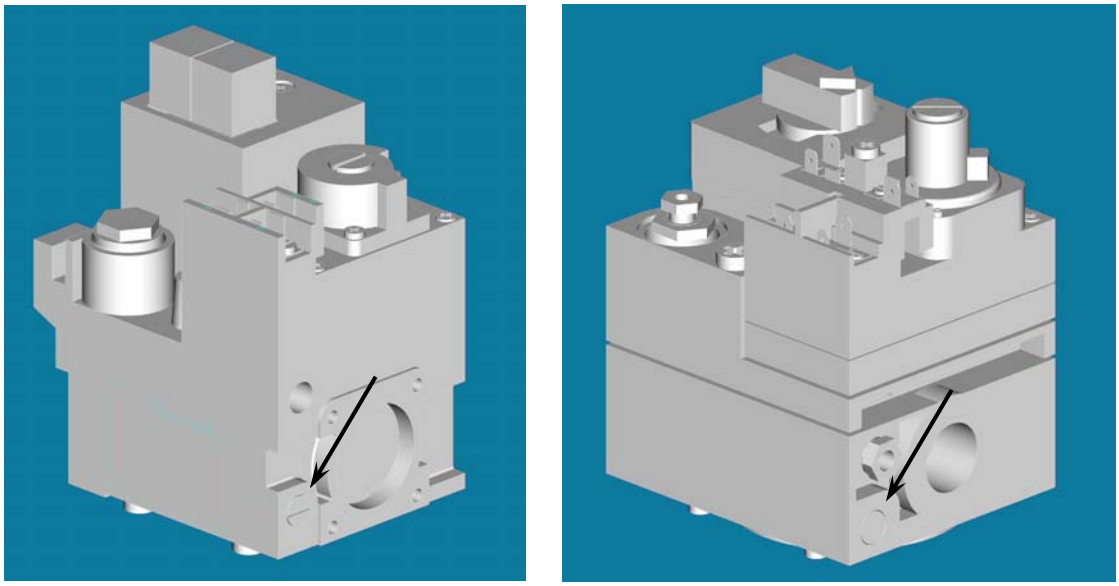
   e. Reinstall the thermostat knob.

## 1.5 Check Burner Manifold Pressure

**⚠ WARNING**
**This task should be performed by qualified service personnel only.**

1. Ensure that the gas valve knob is in the "OFF" position (non-CE), or press red button to turn gas valve off (CE).

2. Remove the pressure tap plug from the gas valve (see illustration below).



Pressure tap locations on CE gas valves (left) and non-CE gas valves (right).

3. Insert the fitting for a gas pressure-measuring device into the pressure tap hole.

4. Place the gas valve in the "Pilot" position (non-CE), or press white button and light pilot (CE). After the pilot is lit (turn non-CE gas valve to "ON" position), set thermostat knob to 350°F (177°C). When the burner lights and continues to burn, note gas pressure reading for correct pressure in accordance with the table on page 1-1.

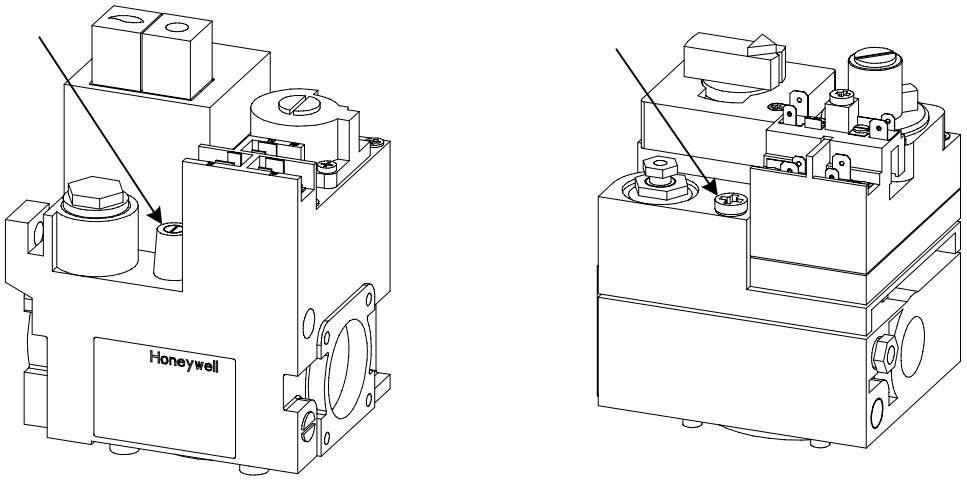
5. To adjust burner gas pressure, remove the cap from the gas valve regulator and adjust to correct pressure.

6. Place the fryer power switch and the gas valve in the "OFF" position. Remove the pressure-measuring device fitting from the pressure tap hole and reinstall the pressure tap plug.

7. Repeat step 4 to continue fryer operation.

## 1.6 Adjusting the Pilot Flame

1. Remove the cover shown in the illustration below to access the pilot flame adjustment screw in the gas valve.




Pilot adjustment locations on CE gas valves (left) and non-CE gas valves (right).

2. Using a small, flat-tipped screwdriver, turn the pilot flame adjustment screw counterclockwise to increase the length of the flame or clockwise to decrease the length of the flame. Adjust the flame to a length of 1-½ inches (38 mm).

3. Reinstall the pilot flame-adjustment cover.

4. Five-tube millivolt fryers: Adjust the trailing pilot (adjustment valve located on the burner manifold) until a 1-½ inch (38 mm) flame is obtained.

## 1.7 Replacing Fryer Components

### 1.7.1 Replacing the Operating Thermostat

1. Drain the fryer and turn the gas off.

2. Remove the thermostat knob by pulling straight out on the knob with a firm, steady pull.

3. Disconnect the wires from the thermostat.

4. Remove the two mounting screws to release the thermostat control from its mounting bracket.

5. Remove the screws and clamp that secure the thermostat bulb to the frypot. Remove spring from bulb and reinstall on replacement thermostat bulb.

### 1.7.1 Replacing the Operating Thermostat (cont.)

6. First, loosen the capillary tube compression fitting until it slides freely on the capillary tube. Second, loosen the frypot pass-through nut until it slides freely on the capillary tube. Remove the capillary tube and bulb from the frypot.

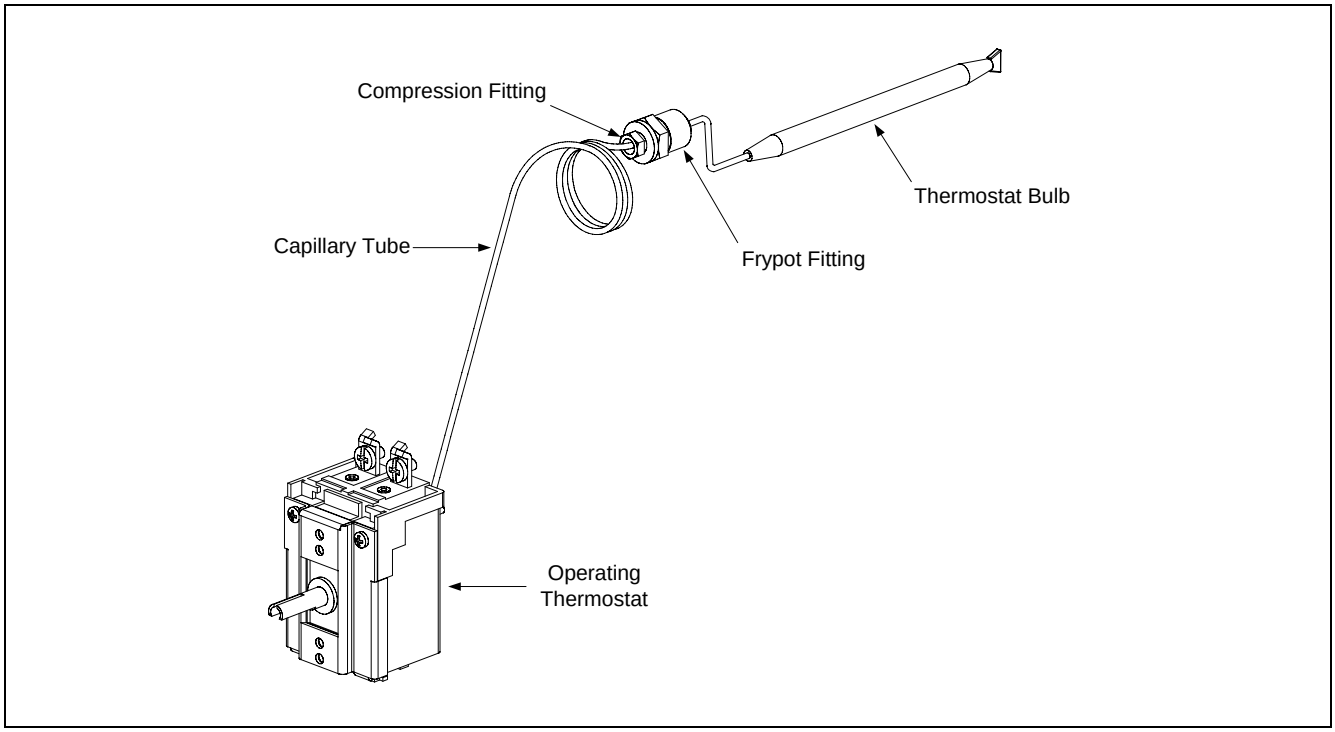
7. Install the replacement thermostat capillary tube and bulb in the frypot. Apply a small amount of Loctite PST567 compound or equivalent to the threads of the frypot pass-through nut and screw the replacement thermostat securely into the frypot, being careful not to twist the capillary tube as the fitting is tightened. **DO NOT** tighten the capillary tube compression nut at this time.

8. Position the thermostat bulb in tube-mounted clamp and replace mounting hardware. Ensure probe bulb is properly positioned in the clamp (¼" from burner tube) and screws are properly tightened.

9. Tighten the capillary tube compression nut once the capillary tube is properly positioned. NOTE: Once the compression nut is tightened, the capillary tube cannot be repositioned. If a mistake in installation has been made, a new thermostat will have to be installed.

10. Mount the thermostat control to the mounting bracket using the screws removed in Step 4.

11. Connect the wires disconnected in Step 3 to the thermostat.




12. Install the thermostat knob on thermostat control shaft. Check thermostat calibration and calibrate if the range is outside of the recommended ranges in section 1.4.

### 1.7.2 Replacing the High-Limit Thermostat

1. Follow instructions for replacing operating thermostat, section 1.7.1, omitting steps 2 and 12.

### 1.7.3 Replacing the Gas Valve

**⚠ DANGER**
**Drain the frypot or remove the handle from the drain valve before proceeding further.**

1. Disconnect fryer from the gas supply.

2. Disconnect wiring from the gas valve terminal block, marking each wire to facilitate reconnection.

3. Disconnect the pilot gas line fitting from the gas valve and remove the vent tube.

4. Disconnect the union that connects burner manifold and gas valve piping.

5. Remove all pipefittings from old gas valve and install on new gas valve. Apply a small amount of Loctite PST567 compound or equivalent to pipe threads prior to installing on new valve. Do not apply compound to the first two pipe threads. Doing so will clog and damage the gas valve.

6. Reinstall new gas valve following steps 1-4 in reverse.

### 1.7.4 Replacing the Frypot

1. Drain the frypot and disconnect the fryer from the gas supply.

2. Remove all accessories (e.g., frypot covers, drop-in probes, basket hangers, etc.).

3. Remove the screws from the cabinet back and remove it from the fryer.

4. Remove the screws attaching the flue cap to the frypot and lift the flue cap off the fryer.

5. Remove the door by lifting it upward to disengage the lower hinge pin from the hinge bracket. Retain any spacers between lower hinge and door for reassembly.

6. Remove the screws from the front cowling and remove the cowling by lifting up and out off the front lip of the frypot.

7. Remove the screws securing the flue to the frypot and remove it from the fryer.

8. Lift the frypot out of the cabinet, using care not to bump or damage the gas valve/burner assembly or the thermostat/high-limit. Set the frypot upside down on a clean surface for removal of the remaining components.

### 1.7.4 Replacing the Frypot (cont.)

9. Recover the drain valve, high-limit thermostat, operating thermostat, and burner manifold assembly from the failed frypot.
10. Clean the threads on the recovered parts, apply Loctite PST 567 or equivalent thread sealer, and install them on the replacement frypot.
11. Reverse Steps 1-9 to install the replacement frypot in the cabinet.

**For SUFF/UFF Filtration-equipped systems, consult the Decathlon Series Gas Fryers Service & Parts Manual (819-5922), Section 1.7.8, for detailed frypot-removal instructions.**

## 1.8 Troubleshooting and Problem Isolation

This section is intended to provide technicians with a general knowledge of the broad problem categories associated with this equipment, and the probable causes of each. With this knowledge, the technician should be able to isolate and correct any problem encountered.

Problems you are likely to encounter can be grouped into these broad categories:

1. Pilot failures
2. Improper burner functioning
3. Improper temperature control
4. Filtration Problems
5. Leaking

The probable causes and corrective actions for each category are discussed in the following sections.

### 1.8.1 Pilot Failures

When troubleshooting millivolt systems, always check these areas before performing diagnostic checks on either the Robertshaw or Honeywell systems:

A. Inspect all wires and component leads for damage (heat, oil, moisture, etc.). On capillary tube-type thermostats, check for resistance on the thermostat lead wires. Wire nuts and other connectors cannot be present in a millivolt circuit as they can cause resistance. If resistance is found, solder the connectors to the wires or replace the wires.

B. Clean and verify that all wire connections and gas valve terminal connections are tight.

C. Check the length of the pilot flame (it should be about 1½-inches (38mm) long) and verify that it contacts the top one third of the thermopile. Clean the pilot orifice and adjust the pilot strength if needed.

D. Measure thermopile output with no load (i.e., with the thermopile disconnected from the gas valve). Measurement must be made with a multimeter having a 0-1000 DC millivolt (MV) range. Light the pilot and have someone hold the gas cock knob in the depressed position. If the thermopile is a single lead (coaxial) type, measure from the lead's end contact to its screw-in threads. If the thermopile has two leads, measure across the end terminals. The reading should be within the range of 500-800 millivolts. If not, replace the thermopile.

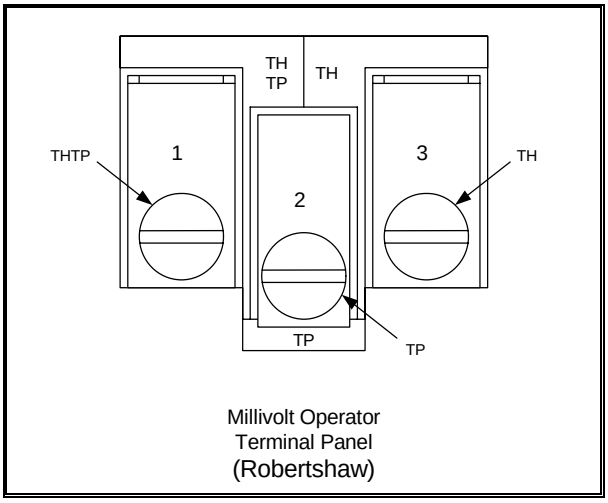
Performing diagnostic checks on Robertshaw and Honeywell valves are described on the next page.

## ROBERTSHAW-UNITROL 7000 SYSTEM CHECK

1. **Complete System Check**
   With thermostat contacts closed and gas cock dial in the "ON" position, the main burner should ignite. Measure the reading between the 2 & 3 terminals. If the reading is more than 100MV, replace the gas valve.

2. **System Resistance Check**
   With thermostat contacts closed and main burner "ON", measure the millivolt reading between the 1 and 3 terminals. The reading should be less than 80MV. If not, recheck the thermostat leads and connections. Replace with new or heavier gauge wires if necessary. If the reading is still greater than 80MV, replace the thermostat.

3. **Automatic Pilot Dropout Check**
   With the thermostat contacts open, hold the gas cock knob depressed with the pilot lit until the maximum millivolt output is observed between the 1 and 2 terminals. Then extinguish the pilot and observe the meter. The sound of the pilot magnet dropping should be audible. This dropout should occur between 120MV and 30MV. If it occurs outside these limits, change the gas valve.



Millivolt Operator
Terminal Panel
(Robertshaw)

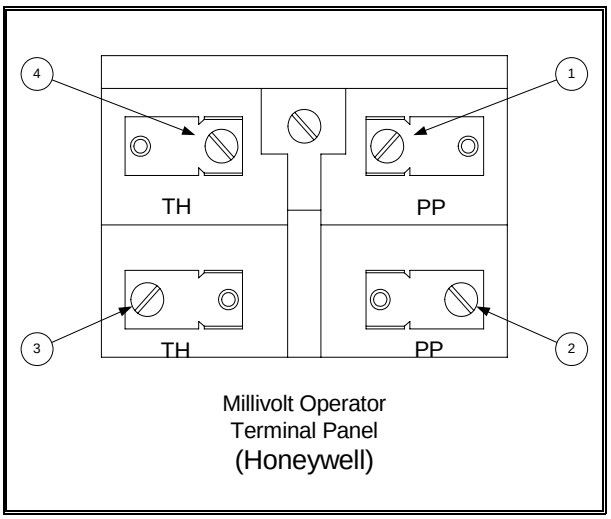
| Test | Meter Setting | Meter Leads On Terminals | | | Acceptable Results |
|---|---|---|---|---|---|
| 1 | MV | 2 | & | 3 | <100MV |
| 2 | MV | 1 | & | 3 | <80MV |
| 3 | MV | 1 | & | 2 | 30-120MV |

## HONEYWELL SYSTEM CHECK

1. **Complete System Check**
   With thermostat contacts closed and gas cock dial in the "ON" position, main burner should ignite. If not, measure across terminals 2 and 3 as indicated in the diagram. If the reading is more than 180MV, replace the gas valve.

2. **System Resistance Check**
   With thermostat contacts closed and main burner "ON", measure the millivolt reading between terminals 1 and 3 as indicated in the diagram. The reading should be 220MV or less. If not, recheck thermostat leads and connections. Replace with new or heavier gauge wires if necessary. If the reading is still greater than 220MV, replace the thermostat.

3. **Automatic Pilot Dropout Check**
   With the thermostat contacts open, hold the gas cock knob depressed with the pilot lit until the maximum millivolt output is observed between terminals 1 and 2. Then extinguish the pilot and observe the meter. The sound of the pilot magnet dropping should be audible. This dropout should occur between 110MV and 36MV. If it occurs outside these limits, change the gas valve.



Millivolt Operator
Terminal Panel
(Honeywell)

| Test | Meter Setting | Meter Leads On Terminals | | | Acceptable Results |
|---|---|---|---|---|---|
| 1 | MV | 2 | & | 3 | <180MV |
| 2 | MV | 1 | & | 3 | <220MV |
| 3 | MV | 1 | & | 2 | 36-110MV |

Pilot failures fall into one of two categories – failure to light or failure to remain lit.

### Pilot Fails to Light

1. Gas is not being supplied to the valve: Check for a closed gas cutoff valve upstream of the gas valve. Also verify that the gas line quick disconnect fitting at the rear of the fryer (if so equipped) is properly connected.

2. Blocked pilot orifice: If gas is reaching the valve but the pilot will not light, check for an obstruction in the pilot orifice, especially in new installations. If the orifice is clear, check to be sure that the pilot adjustment screw is not completely closed.

### Pilot Does Not Remain Lit When Gas Valve Knob is Released

The gas valve used on Dean millivolt fryers has a pair of normally open coils (electromagnetic switches) that close when low voltage is applied to them. If the coils do not close, the valve will not open to supply gas to the pilot or to the burner manifold. Turning the gas valve knob to the pilot position and pressing it in bypasses the pilot coil, allowing the pilot to be lit. The pilot flame heats the thermopile, which generates the voltage required to close the coils. If the pilot flame goes out when the knob is released, there are four probable causes:

1. **Open or grounded high-limit:** The high-limit thermostat functions as a normally closed switch. If the high-limit is open or grounded, the gas valve coil will not pull in and no gas will be supplied to the pilot or to the burner manifold.

   **Check and Corrective Action:** Detach the high-limit leads from the gas valve and check for continuity. See page 1-10. If the high-limit fails the continuity check, it must be replaced.

2. **Loose/corroded wiring connections on high-limit or thermopile:** This has the same effect as a grounded or open high-limit. If the gas valve coils do not receive the appropriate voltage from the thermopile, they will not close and no gas will be supplied to the pilot or to the burner manifold.

   **Check and Corrective Action:** Check wiring connections for corrosion and tightness. Check terminals to verify that they are securely attached to their leads.

3. **Low or no voltage out of thermopile:** If the pilot flame does not surround the tip of the thermopile, it will not generate sufficient voltage to the gas valve coils for them to close. No gas will be supplied to the pilot or to the burner manifold.

   **Checks and Corrective Actions**: Observe pilot flame located between the middle burners on the frypot. If the pilot flame is less than 1-½ inches (38 mm) adjust the pilot flame in accordance with Section 1.6. If the flame is being blown away from the thermopile, eliminate the draft that is causing the problem.

   If the pilot flame correctly surrounds the tip of the thermopile, see D on Page 1-9.

4. **Malfunctioning gas valve:** If either of the coils in the gas valve fails, no gas will be supplied to the pilot or to the burner manifold.

   **Check and Corrective Action:** See page 1-10 for check procedures to see if the gas valve has failed. Instructions to replace the gas valve are found in section 1.7.3.

### 1.8.2 Improper Burner Functioning

***Fluctuating flame intensity*** is normally caused by improper or fluctuating incoming gas pressure, but may also be the result of variations in the kitchen atmosphere. Variation in the kitchen atmosphere is usually caused by air conditioning and/or ventilation units starting and stopping. Changes in airflow patterns can also affect flame intensity. If the incoming gas pressure is correct and stable, check for variations in the kitchen atmosphere.

***Flames "rolling" out of the fryer*** are usually an indication of negative pressure in the kitchen. Air is being sucked out of the fryer enclosure and the flames are literally following the air. If negative pressure is not the cause, check for high burner-manifold gas pressure. An obstructed flue, which prevents the fryer from properly exhausting, may also be the cause.

An ***excessively noisy burner***, especially with ***flames visible above the flue opening***, may indicate that the burner gas pressure is too high, the gas valve vent tube is blocked, or the tube diffusers are damaged or worn out. If the gas pressure is correct, the vent tube is unobstructed, and the diffusers are in good condition, the gas valve regulator is probably defective.

Occasionally a burner may appear to be operating correctly, but the fryer has a ***slow recovery rate*** (the length of time required for the fryer to increase the oil temperature from 275ºF to 325ºF (135ºC to 163ºC). The primary causes of this are low burner manifold pressure and/or misaligned burners. If both of these causes are ruled out, the probable cause is a gas valve regulator that is out of adjustment. Refer to the **Check Burner Manifold Pressure** procedure in section 1.5.

### 1.8.3 Improper Temperature Control (i.e., failure to control at set point)

Temperature control is a function of several interrelated components, each of which must operate correctly. The principle component, however, is the thermostat.

The thermostat must be checked periodically to ensure that it is in calibration. Refer to Calibrating the Operating Thermostat in section 1.4 for the procedure.

If the thermostat is properly calibrated, the probable causes are damage to the thermostat bulb, kinking of the capillary tube, and broken or loose wiring. Inspect the thermostat components for visible damage.

If there are dents in the bulb, if the capillary is kinked, or if there is obvious damage to the leads, the thermostat should be replaced.

If there is no obvious damage to the thermostat, turn off the gas valve and allow the cooking oil to cool to at least 15 degrees below the thermostat setting. Disconnect the thermostat leads from the gas valve and check for continuity. If the thermostat fails the continuity check, it must be replaced.

### 1.8.4 Filtration Problems

The majority of filtration problems arise from operator error. One of the most common errors is placing the filter paper on the bottom of the filter pan rather than over the filter screen.

Whenever the complaint is "the pump is running, but no oil is being filtered", check the installation and size of the filter paper. Verify that the O-ring on the slip-connection is in good condition. A missing or worn O-ring allows the pump to suck air, decreasing its efficiency.

If the pump motor overheats, its thermal overload will trip and the motor will not start until it is reset. If the pump motor does not start, press the red reset switch located on the rear of the motor. Also, reset the filter circuit breaker located under the fryer control panel. If the pump then starts, something caused the motor to overheat. Maybe several frypots were filtered one after the other and the pump got hot. Letting the motor cool down for at least a half-hour is all that is required in this case. More often, the pump overheated for one of the following reasons:

- If solid shortening is used: Shortening solidified in the pan or filter lines.

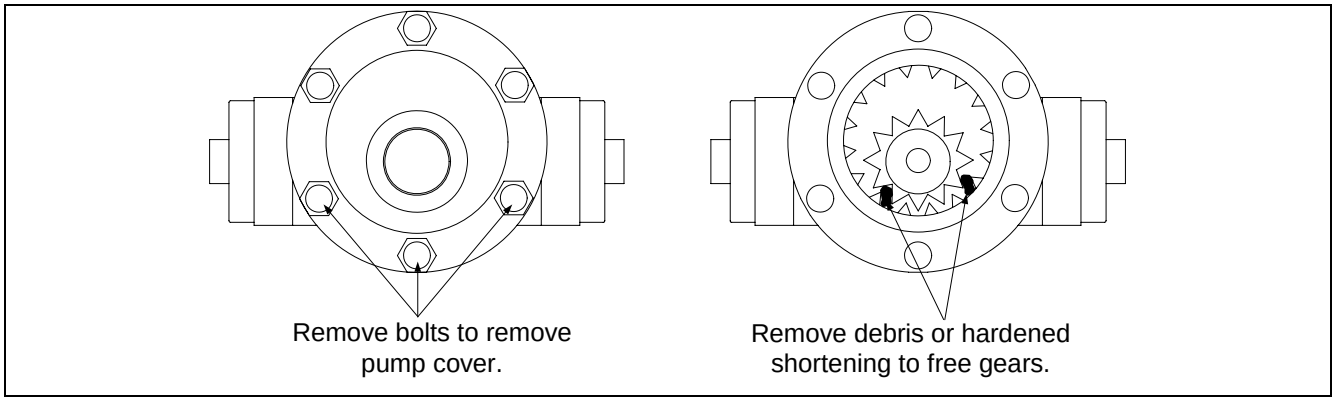
- The operator attempted to filter unheated oil. Cold oil is thicker and causes the pump motor to work harder and overheat.

If the motor runs but the pump does not, there is a blockage in the pump. Incorrectly sized or installed paper allows food particles and sediment to pass through the filter pan and into the pump. When sediment enters the pump, the gears bind up causing the motor to overheat, tripping the thermal overload. Solidified shortening in the pump will produce the same result.

A pump seized by debris or hard shortening must be disassembled, cleaned and reassembled.

1. Disconnect power to the filter system.

2. Remove the front cover of the pump to access the gears inside (see illustration- 8-GPM pump shown), if the pump is accessible while still inside the cabinet. If the front cover is not accessible, the pump must be removed from the pump motor (remove input/output plumbing from the pump prior to removing pump). Remove three setscrews to disengage the pump from the motor.



### 1.8.4 Filtration Problems (cont.)

3. Prior to reassembly, the inside housing must be clean and free of any sediment or debris. Failure to completely clean the inside housing and ring gear will cause gear binding after reassembly.

Incorrectly sized or installed paper will allow food particles and sediment to pass through and clog the suction tube on the bottom of the filter carriage. Particles large enough to block the suction tube may indicate that the crumb tray is not being used.

Pan blockage can also occur if shortening is left in the pan and allowed to solidify. Heater strips (if equipped) on the oil return plumbing are designed to prevent solidification of shortening left in the plumbing. Heater strips will not melt or prevent solidification of shortening in the pan.

Blockage removal can be accomplished by forcing the item out with an auger or drain snake. Compressed air or other pressurized gases should not be used to force out the blockage.

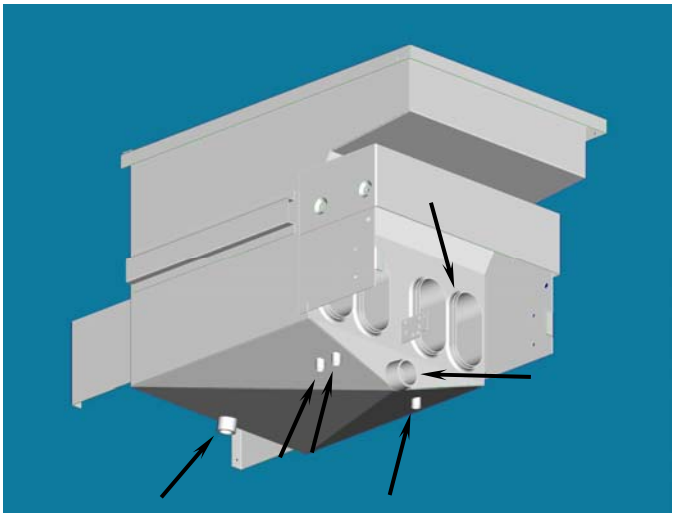
The electronics of the SUFF/UFF filtration systems are simple and straightforward. Microswitches, attached to handles for each vat and wired in parallel, provide the 24 VAC required to activate the pump relay coil when the handles are moved to the ON position. The activated pump relay coil pulls in the pump motor switch, supplying power to the pump motor.

Filter systems equipped with oil-return heaters are wired into the 120 VAC source, which remain energized as long as the unit is plugged in.

### 1.8.5 Leaking

Leakage of the frypot usually will be due to improperly sealed high-limits, thermostats, or drain fittings. When installed or replaced, each of these components must be sealed with Loctite PST567 sealant or equivalent to prevent leakage. In very rare cases, a leak may develop along one of the welded edges of the frypot. When this occurs, the frypot must be replaced.

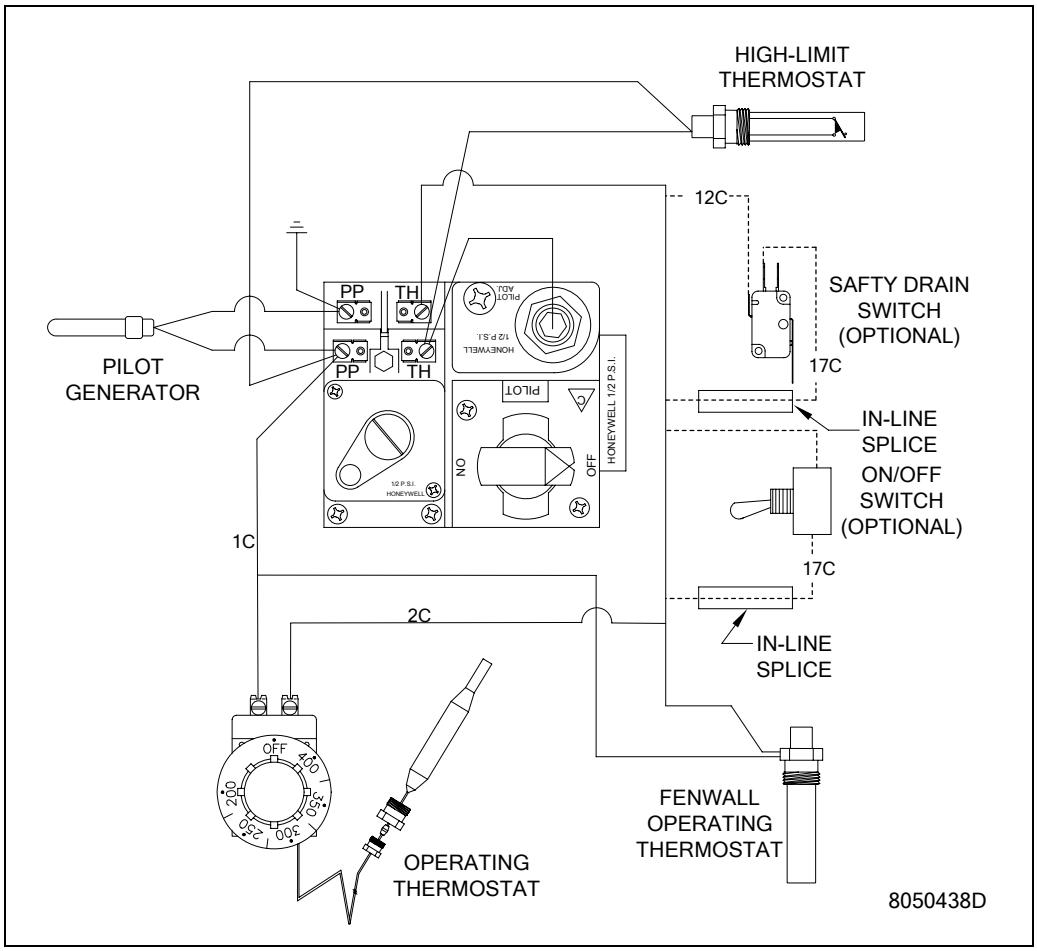
If the sides and/or ends of the frypot are coated with oil, the most likely cause is spillage over the top of the frypot rather than leakage.

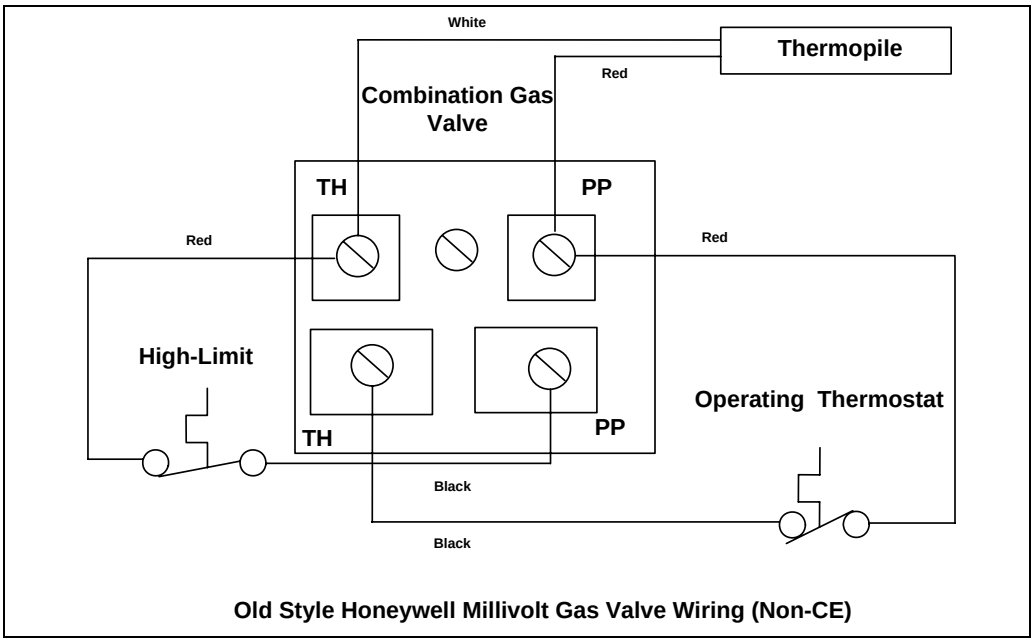


Frypot locations (indicated by arrows) where potential leaks could occur.

## 1.9 Wiring Diagrams

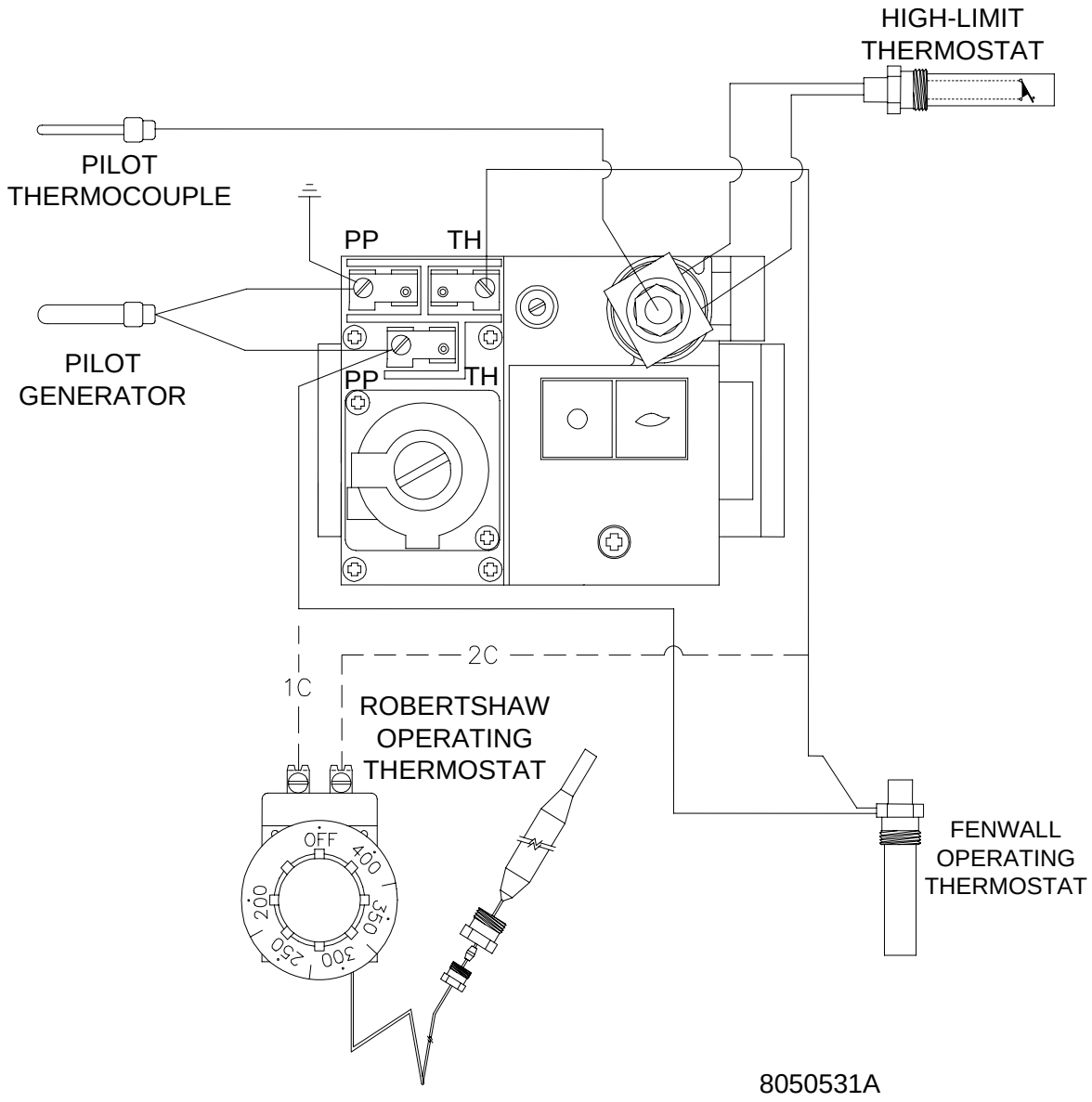
### 1.9.1 Current Production Units with Honeywell Gas Valve (Non-CE)



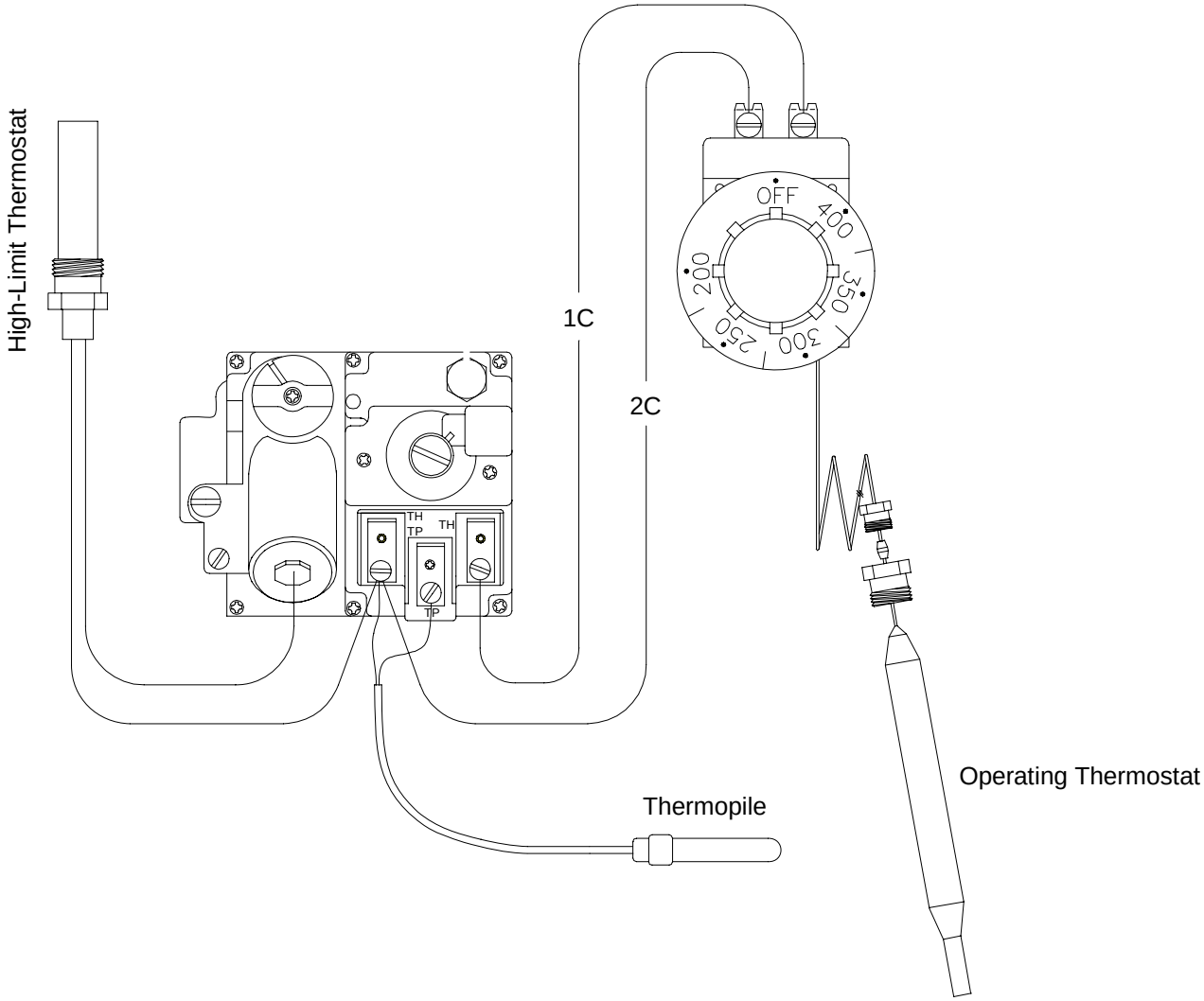




**Old Style Honeywell Millivolt Gas Valve Wiring (Non-CE)**

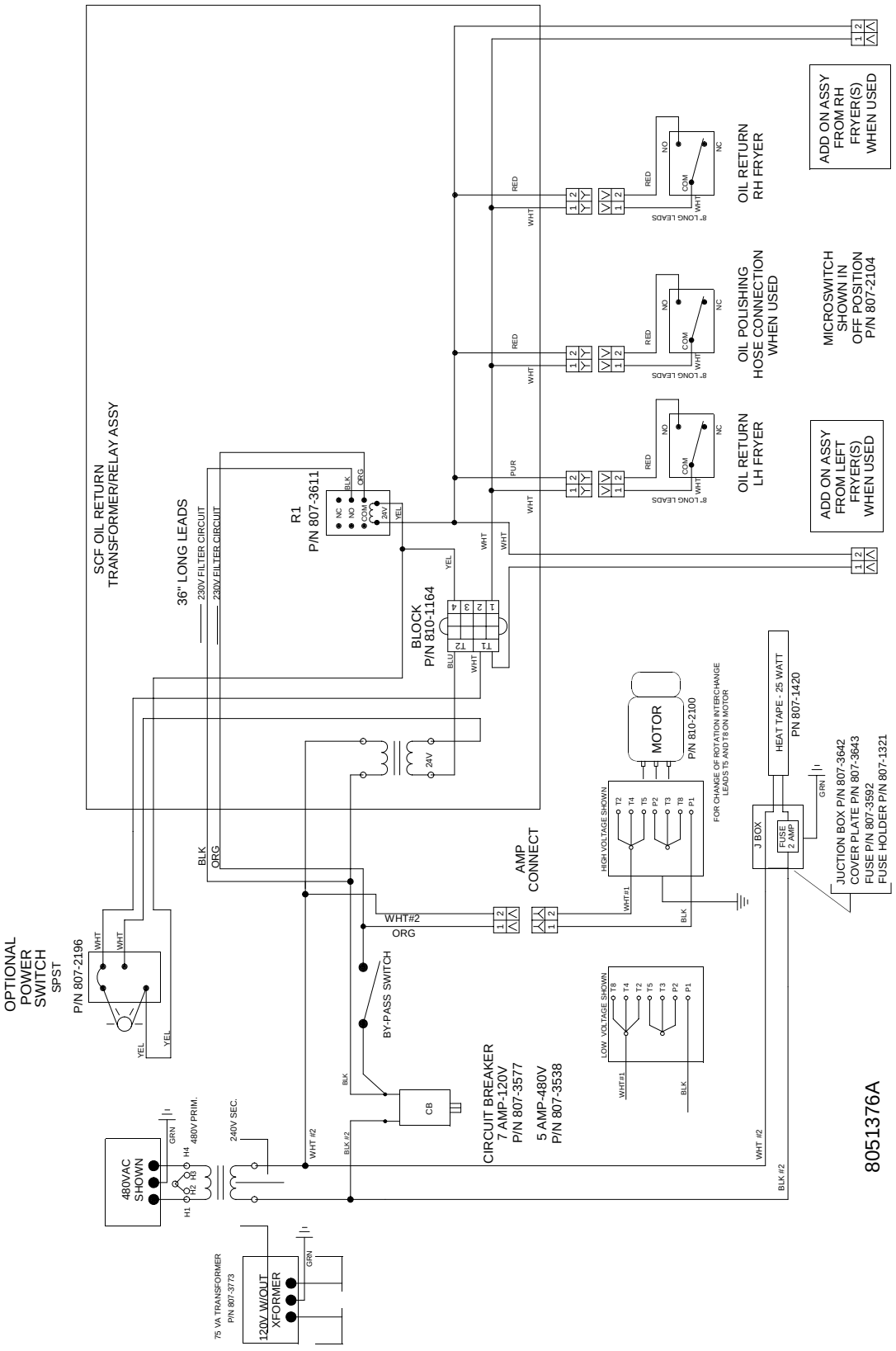
### 1.9.2 Current Production Units with Honeywell Gas Valve (CE)



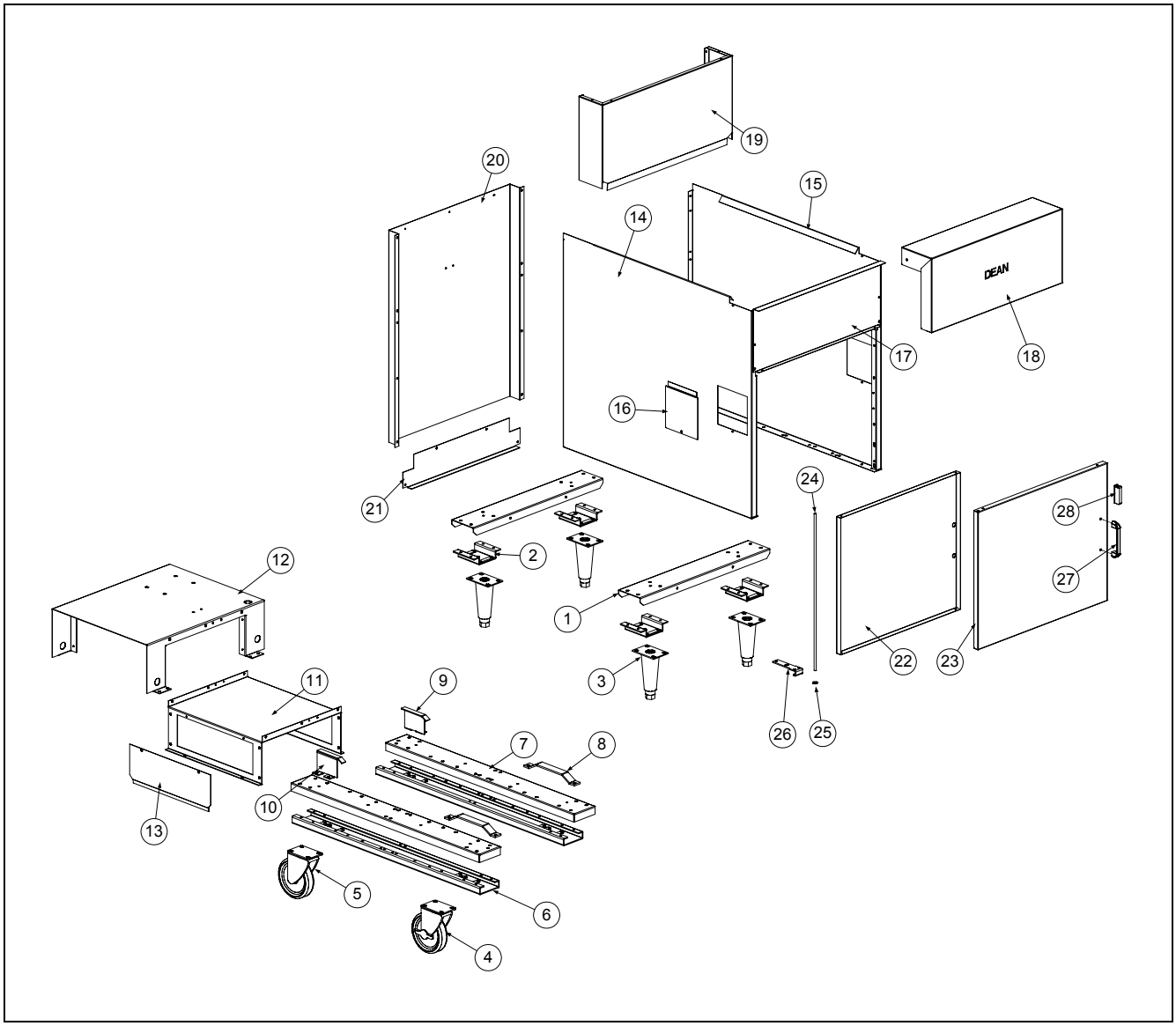
### 1.9.3 Current Production Units with Robertshaw Gas Valve (After May, 2002)



## 1.9.4 UFF Filtration Wiring Diagram



## 2.1 Cabinetry Components, Single Fryers




| ITEM | PART # | COMPONENT |
|---|---|---|
| * | 810-2793 | Basket Hanger SR142 **(Hook Over the Flue)** Thumbscrews not needed |
| * | 200-1360 | Basket Hanger **SR42** (Thumbscrew 809-0171, Cage Nut 826-1351) |
| * | 210-1595 | Basket Hanger **SM-50** Single (Use 210-3131 for double) |
| * | 210-5109 | Joiner Strip **SM20, SM50** |
| 1 | | **Channel, Base- Front & Rear (Non-Filtration Single Fryers)** |
| * | 12-0373 | Channel, Base- Front & Rear- **SR38G** obsolete |
| * | 200-1118 | Channel, Base- Front & Rear- **SR42G, SR52G, SM220G SM35G, SM40G, SM50G** |
| * | 200-5655 | Channel, Base- Front & Rear-**SR62G** |
| * | 200-3269 | Channel, Base- Front & Rear- **SM20G** |
| * | 200-2493 | Channel, Base- Front & Rear- **SM60G** |
| * | 200-2686 | Channel, Base- Front & Rear- **SM80G** |
| 2 | 823-3248 | Support, Leg (Use Where Applicable) |
| 3 | 806-5043 | Leg, Adjustable- With Mounting Plate- All Millivolt Fryers |

* Not Illustrated

## 2.1 Cabinetry Components, Single Fryers (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 4 | 810-0357 | Caster, Swivel- With Brake- All Millivolt Fryers |
| 5 | 810-0356 | Caster, Swivel- Without Brake- All Millivolt Fryers |
| | | **SUFF Base Components- SM Series With SUFF Filtration** |
| 6 | 823-3791 | Support, Leg- Left- SUFF 50- **SM40G, SM50G** |
| * | 823-3792 | Support, Leg- Right- SUFF 50- **SM40G, SM50G** |
| * | 823-3724 | Support, Leg- Left & Right- SUFF 60/80- **SM60G, SM80G** |
| 7 | 202-3529 | Base, Channel- Right- SUFF 50- **SM40G, SM50G** |
| * | 201-3259 | Base, Channel- Left- SUFF 50- **SM40G, SM50G** |
| * | 200-3459 | Base, Channel- Right & Left- SUFF 60/80- **SM60G, SM80G** |
| 8 | 210-3636 | Slide, Front- SUFF Filter, All Systems |
| 9 | 823-3751 | Slide, Rear, Left- SUFF Filter- **SM60G, SM80G** |
| * | 823-3788 | Slide, Rear, Left- SUFF Filter- **SM50G** |
| 10 | 823-3752 | Slide, Rear, Right- SUFF Filter- **SM60G, SM80G** |
| * | 823-3789 | Slide, Rear, Right- SUFF Filter- **SM50G** |
| 11 | 200-3522 | Base, Lower Filter- SUFF 50- **SM40G, SM50G** |
| * | 200-3494 | Base, Lower Filter- SUFF 60- **SM60G** |
| * | 200-3403 | Base, Lower Filter- SUFF 80- **SM80G** |
| 12 | 823-3783 | Base, Upper Filter- SUFF 50- **SM40G, SM50G** |
| * | 823-3765 | Base, Upper Filter- SUFF 60- **SM60G** |
| * | 823-3745 | Base, Upper Filter- SUFF 80- **SM80G** |
| 13 | 200-3524 | Cover, Electrical Access- SUFF 50- **SM40G, SM50G** |
| * | 200-3461 | Cover, Electrical Access- SUFF 60- **SM60G, SM80G** |
| 14 | | **Side Panel, Left** |
| * | 12-0380-1 | Side Panel, Left- Painted Aluminum- **SR38G** *obsolete* |
| * | 201-1137SP | Side Panel, Left- Painted Aluminum-**SR42G, SR52G (Use 202-5693SP for SR62G)** |
| * | 211-3329 | Side Panel, Left- **SM20G** |
| * | 201-2858 | Side Panel, Left- Painted CRS- **SM35G, SM50G** |
| * | 201-1299 | Side Panel, Left- Painted CRS- **SM50GDD** |
| * | 211-2076 | Side Panel, Left- S/S- **SR42G, SM35G, SM50G (Use 211-5693 for SR62G)** |
| * | 211-2532 | Side Panel, Left- S/S- **SM60G, SM80G** |
| 15 | | **Side Panel, Right** |
| * | 12-0380-2 | Side Panel, Right- Painted Aluminum- **SR38G** *obsolete* |
| * | 202-1137 | Side Panel, Right- Painted Aluminum- **SR42G, SR52G (Use 202-5693SP for SR62G)** |
| * | 212-3329 | Side Panel, Right- **SM20G** |
| * | 202-2858 | Side Panel, Right- Painted CRS- **SM35G, SM50G** |
| * | 202-1299 | Side Panel, Right- Painted CRS- **SM50GDD** |
| * | 212-2076 | Side Panel, Right- S/S- **SR42G, SM35G, SM50G (Use 212-5693 for SR62G)** |
| * | 212-2532 | Side Panel, Right- S/S- **SM60G, SM80G** |
| 16 | 210-2804 | Duct, Door Access- S/S- All Millivolt Fryers |
| * | 200-1471 | Duct, Door Access- Painted- All Millivolt Fryers |
| 17 | 12-0311 | Back, Control Panel- **SR38G** *obsolete* |
| * | 200-1121 | Back, Control Panel- **SR42G, SR52G, SM220G (Use 200-3003 for SR62G)** |
| * | 200-1676 | Back, Control Panel- **SM35G, SM40G, SM50G** |
| * | 200-3558 | Back, Control Panel- **SM50GDD** |
| * | 200-2856 | Back, Control Panel- **SM60G** |
| * | 200-1213 | Back, Control Panel- **SM60G** |
| * | 200-3004 | Back, Control Panel- **SM80G** |
| 18 | 12-0309-2 | Top Cap (Front Canopy)- **SR38G** *obsolete* |
| * | 210-1141 | Top Cap (Front Canopy)- **SR42G, SR52G, SM35G, SM40G, SM50G** |
| * | 07-0132 | Top Cap (Front Canopy)- **SM20G** *obsolete* |
| * | 824-1033 | Top Cap (Front Canopy)- **SM220G** |

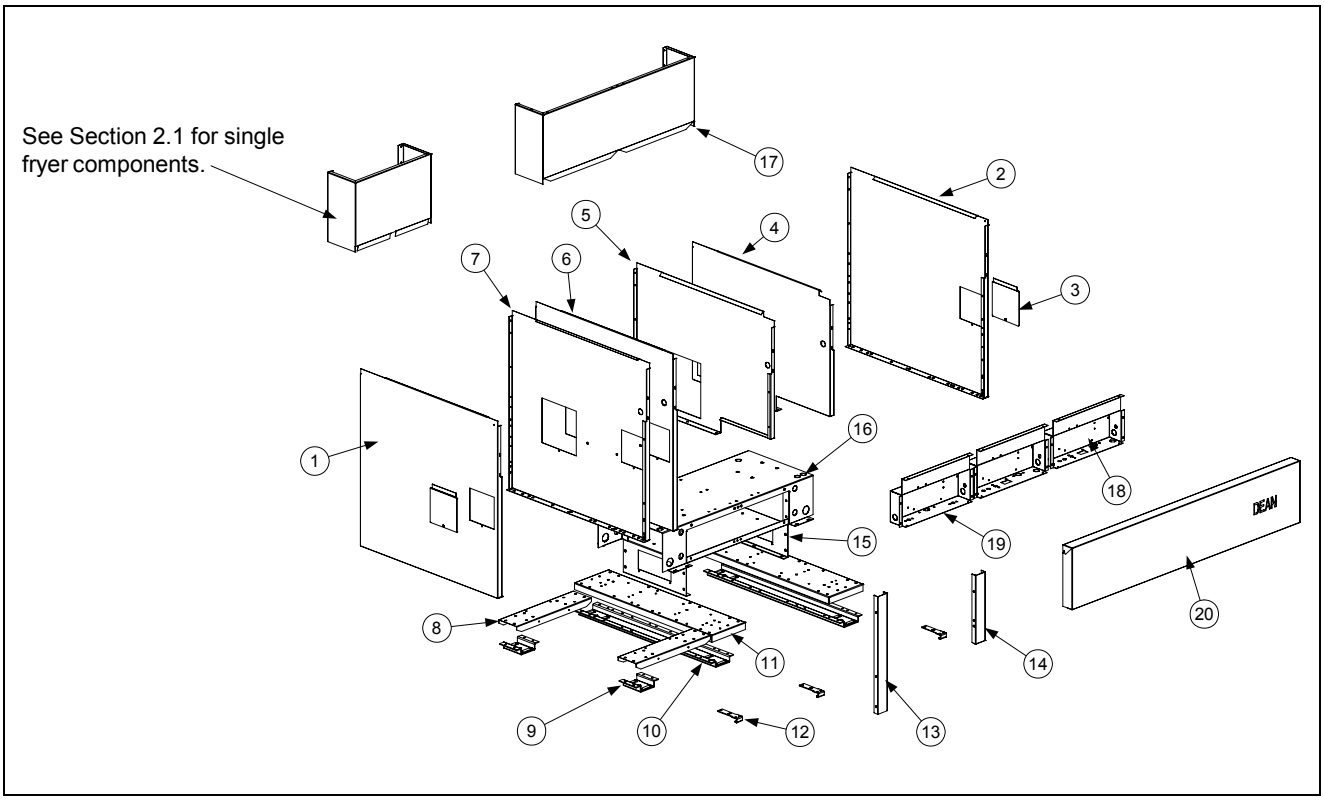
* Not Illustrated

## 2.1 Cabinetry Components, Single Fryers (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| * | 210-3419 | Top Cap (Front Canopy)- **SM50GDD** |
| * | 210-2821 | Top Cap (Front Canopy)- **SM60G, SR62G** |
| * | 210-2811 | Top Cap (Front Canopy)- **SM80G** |
| 19 | 12-0366-2 | Flue Cap- **SR38G** *obsolete* |
| * | 823-4175 | Flue Cap- **SR42G, SR52G (After Feb. 2003 )** obsolete Use 230-0031 |
| * | 823-4437 | Flue Cap- **SR62G** |
| * | 823-3467 | Flue Cap- **SM35G, SM40G (SR42G, SR52G Prior To Feb. 2003)** *obsolete* |
| * | 823-3700 | Flue Cap- **SM20G** |
| * | 823-3702 | Flue Cap- **SM220G** |
| * | 823-3521 | Flue Cap- **SM50G** |
| * | 823-3575 | Flue Cap- **SM50GDD** |
| * | 823-3635 | Flue Cap- **SM60G** |
| * | 823-3512 | Flue Cap- **SM80G** |
| 20 | 12-0401 | Back, Upper Cabinet- **SR38G** *obsolete* |
| * | 200-1123 | Back, Upper Cabinet- **SR42G, SR52G, SM35G, SM50G** |
| * | 200-1377 | Back, One-Piece Cabinet- **SM35G, SM50G** |
| * | 200-1674 | Back, Upper Cabinet- **SM50G (SUFF), SM220G** |
| * | 200-1213 | Back, Upper Cabinet- **SM60G / SR62G** |
| * | 200-2683 | Back, Upper Cabinet- **SM80G** |
| 21 | 12-0402 | Back, Lower Cabinet- **SR38G** *obsolete* |
| * | 200-1126 | Back, Lower Cabinet- **SM35G, SM50G, SM50GDD** |
| * | 200-1327 | Back, Lower Cabinet- **SM60G** |
| * | 210-2684 | Back, Lower Cabinet- **SM80G** |
| | | **Door Assembly Components** |
| 22 | 200-3807 | Panel, Inner Door- **SM20G** |
| * | 200-1379 | Panel, Inner Door- **SM220G, SM35G, SM40G, SM50G** |
| * | 200-1185 | Panel, Inner Door- **SM60G** |
| * | 200-2688 | Panel, Inner Door- **SM80G** |
| 23 | 12-0308-2 | Panel, Door- **SR38G** *obsolete* |
| * | 210-4770 | Panel, Door- **SR42G, SR52G *(Assembly 106-3150SP)*** |
| * | 210-5642 | Panel, Door- **SR62G *(Assembly 106-3444SP)*** |
| * | 106-4728 | Door Assembly, **Right with Liner**- **SM50** |
| * | 210-3805 | Panel, Outer Door- **SM20G *(Assembly 106-2482SP)*** |
| * | 210-2869 | Panel, Outer Door- **SM220G, SM35G, SM40G, SM50G *(Assembly 106-1754SP)*** |
| * | 210-1424 | Panel, Outer Door- **SM60G** |
| * | 210-1151 | Panel, Outer Door- **SM80G *(Assembly 106-1698SP)*** |
| 24 | 200-1301 | Pin, Door- All Millivolt Fryers ***(Use 826-1343 for Springs qty. 10)*** |
| * | 106-1698SP | Pin, Door Assembly- All Millivolt Fryers (short) |
| 25 | 809-0413 | Spacer, Nylon- All Millivolt Fryers |
| 26 | 200-1307 | Hinge, Door- Lower- **All SR Series Fryers** |
| * | 200-1675 | Hinge, Door- Lower- **All SM Series Fryers** |
| 27 | 810-0180 | Handle, Door- Chrome- **All SM Series Fryers** |
| * | 809-0918 | Screw, #10-24 x ½" (Use With 810-2105) |
| * | 809-0191 | Washer, Lock ¼" (Use With 810-2105) |
| * | 810-1422 | Handle, Wireform- Door- **SR42G, SR52G *(Use 810-2030 before Jan. 03)*** |
| * | 826-1379 | Screw, #10 x ½" Round Phillips (Qty: 10) (Use With 810-1422) |
| 28 | 810-0066 | Catch, Magnetic Door- All Millivolt Fryers |
| * | 823-3225 | Splash Guard **42's & 50's *(Use 823-4767 for 60's & 80's)*** |
| * | 200-3663 | Striker Plate all models except **SR42** |
| * | 210-2897 | Striker Plate **SR42** |
| * | 803-0197 | Fryers Friend Cleanout Tool |

* Not Illustrated

## 2.2 Cabinetry Components, Multi-Battery Frying Systems




| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 211-3261 | Side, Left- S/S- (Use When SM20G Is On End) |
| * | 211-2787 | Side, Left- S/S- (Use When SM50G Is On End) |
| * | 201-3369 | Side, Left- Painted (Use When SM50G is On End) |
| 2 | 212-3261 | Side, Right- S/S- (Use When SM20G Is On End) |
| * | 212-2787 | Side, Right- S/S- (Use When SM50G Is On End) |
| * | 202-3369 | Side, Right- Painted (Use When SM50G is On End) |
| 3 | 210-2804 | Duct, Door Access- All SM Series Multi-Battery Fryers |
| 4 | 202-2799 | Panel, Inner- SUFF Base-Right- **SM50G** |
| 5 | 201-2799 | Panel, Inner- SUFF Base-Left- **SM50G** |
| 6 | 202-3268 | Panel, Inner- Right- **SM20G To SM50G** |
| 7 | 201-3268 | Panel, Inner- Left- **SM20G To SM50G** |
| 8 | 200-1148 | Base Channel, Front & Rear- **SM220G, SM50G (See Section 2.1 For Additional Single Fryer Base Channel Components)** |
| * | 200-3154 | Channel, Double- Front & Rear- **SM80G Systems (4-Battery)** |
| 9 | 823-3248 | Support, Leg- All SM 60/80 Series Multi-Battery Fryers With UFF |
| 10 | 823-3539 | Support, Leg- All SM 20/50 & 50 Series Multi-Battery Fryers With UFF |
| 11 | 200-2783 | Channel, Filter Base- All SM 20/50 Series UFF-Equipped |
| * | 200-1198 | Channel, Filter Base- All SM60G-80G Series UFF-Equipped |
| 12 | 200-1675 | Bracket, Lower Hinge- All SM Series UFF-Equipped |
| 13 | 200-1393 | Channel, Lower Joiner- All SM 20/50 & 50 Series Multi-Battery Fryers With UFF |
| 14 | 200-2308 | Post, Door- All SM 20/50 & 50 Series Multi-Battery Fryers With UFF |

* Not Illustrated

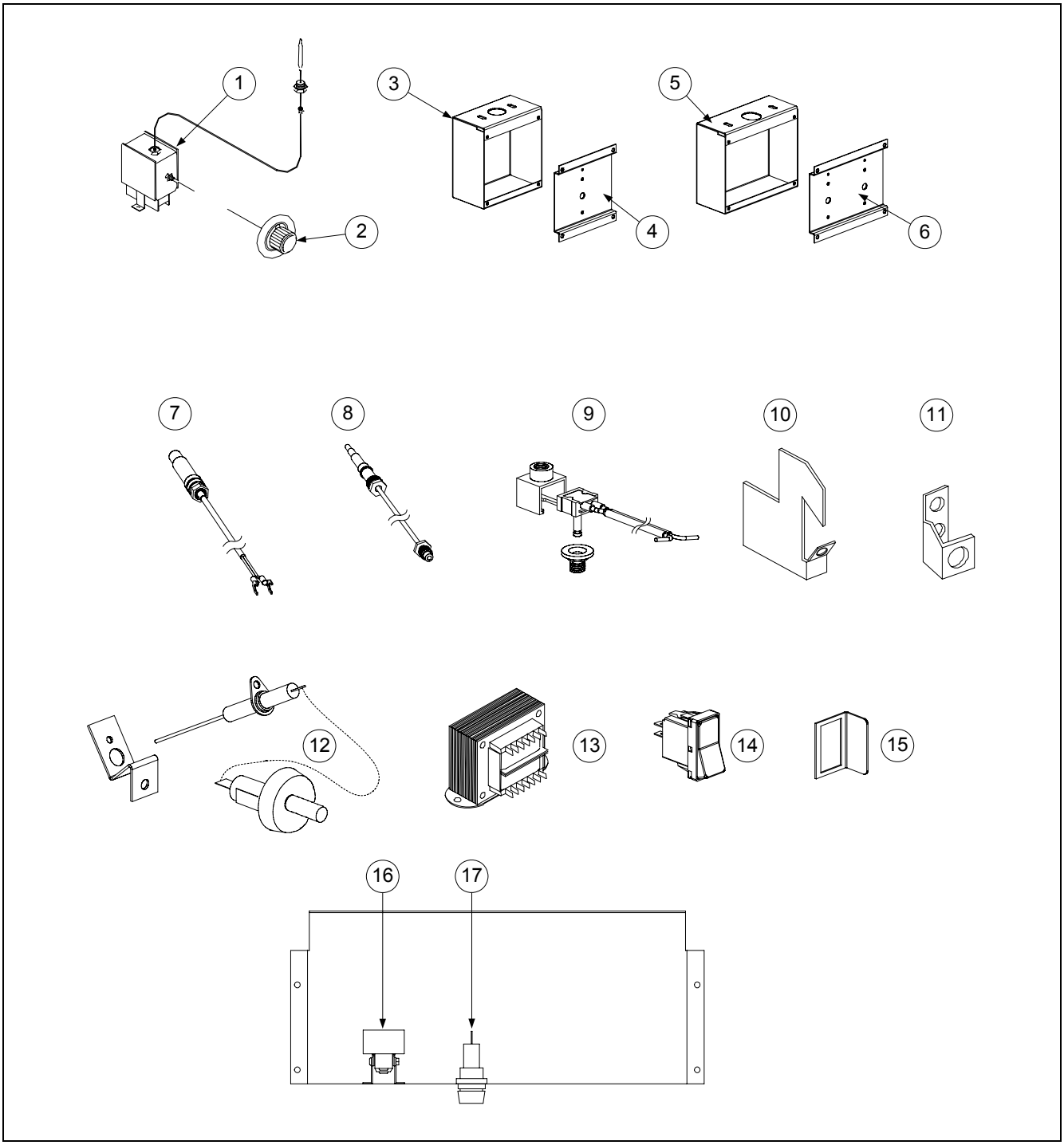
## 2.2 Cabinetry Components, Multi-Battery Frying Systems

| ITEM | PART # | COMPONENT |
|---|---|---|
| 15 | 200-2830 | Base, Filter Frame- Lower- SM 20/50 & 50 Series Multi-Battery Fryers w/ UFF |
| 16 | 200-2785 | Base, Filter Frame- Upper- SM 20/50 & 50 Series Multi-Battery Fryers w/ UFF |
| 17 | 823-3634 | Fluecap, **SM250G** |
| * | 823-3705 | Fluecap, **SM20/20/50G** |
| * | 823-3516 | Fluecap, **SM260G** |
| * | 823-3659 | Fluecap, **SM280G** |
| 18 | 824-0995 | Wireway, Control Panel- **SM50G** |
| * | 824-0993 | Wireway, Control Panel- **SM60G** |
| * | 824-1128 | Wireway, Control Panel- **SM80G** |
| 19 | 824-1025 | Wireway, Control Panel- **SM220G** |
| * | 824-1026 | Wireway, Control Panel- **SM20G** |
| 20 | 824-1029 | Topcap- **SM20/20/50/50G** |
| * | 824-1030 | Topcap- **SM20/50/50/20G** |
| * | 824-1028 | Topcap- **SM20/20/50G** |
| * | 824-1177 | Topcap- **SM20/20/50G 3-Battery** |
| * | 824-0999 | Topcap- **SM250G** |
| * | 824-1000 | Topcap- **SM350G** |
| * | 824-1001 | Topcap- **SM450G** |
| * | 210-2822 | Topcap- **SM260G** |
| * | 210-2824 | Topcap- **SM360G** |
| * | 210-2825 | Topcap- **SM460G** |
| * | 824-1009 | Topcap- **SM280G** |
| * | 824-1010 | Topcap- **SM380G** |
| * | 824-1011 | Topcap- **SM480G** |
| * | 210-5109 | Joiner Strip- **SM22G** |
| * | 210-3182 | Joiner Strip- **SM50/60, SR62G** |
| * | 210-1679 | Joiner Strip- **SM220** |
| * | 210-2681 | Joiner Strip- **SR42** |
| * | KIT00092SP | Air Shutter Kit |
| | | **ACCESSORIES** |
| * | 803-0271 | Basket, Fry **(SM20, SM40, SM50, SR42 and SR52** |
| * | 803-0304 | Basket, Fry **(SM60 and SM80)** |
| * | 803-0277 | Screen, Fine Mesh **SR42 (Use 803-0149 for SR62, SM60)** |
| * | 803-0280 | Screen, Fine Mesh **SM80** |
| * | 803-0273 | Rack, Basket Support **SR42** |
| * | 803-0327 | Grid Assembly **SM20** Basket Rack |
| * | 210-3911 | Hanger, Basket **20/50/MC** |
| * | 210-3368 | Hanger, Basket **SM20 (Hooks over the Flue)** |
| * | 210-1595 | Hanger, Basket **SM35/40/50** SS 15½" |
| * | 200-1360 | Hanger, Basket (Over flue style) **SR42/52** CR 15½" |
| * | 210-2737SP | Hanger, Basket **SR62/SM60/SM160G** SS 20" **(Hooks over Flue)** |
| * | 810-2793 | Hanger, Wire Basket Single **SR42/50** |
| * | 810-2794 | Hanger, Wire Basket Double **SR42/50/62** |
| * | 106-2631SP | Tray Assembly, Sediment **SM60** |
| * | 809-0171 | Thumbscrew (Nut 826-1351 qty. 10) |
| * | 106-1637SP | Frypot Cover **SR42/52, SM50** |
| * | 106-1479SP | Frypot Cover **SM60** |
| * | 106-2470 | Frypot Cover **SM80** |

* Not Illustrated

## 2.3 Component Box Components and Related Components (CE and Domestic)*

* Components are applicable to all Millivolt fryers covered in this manual unless otherwise noted.



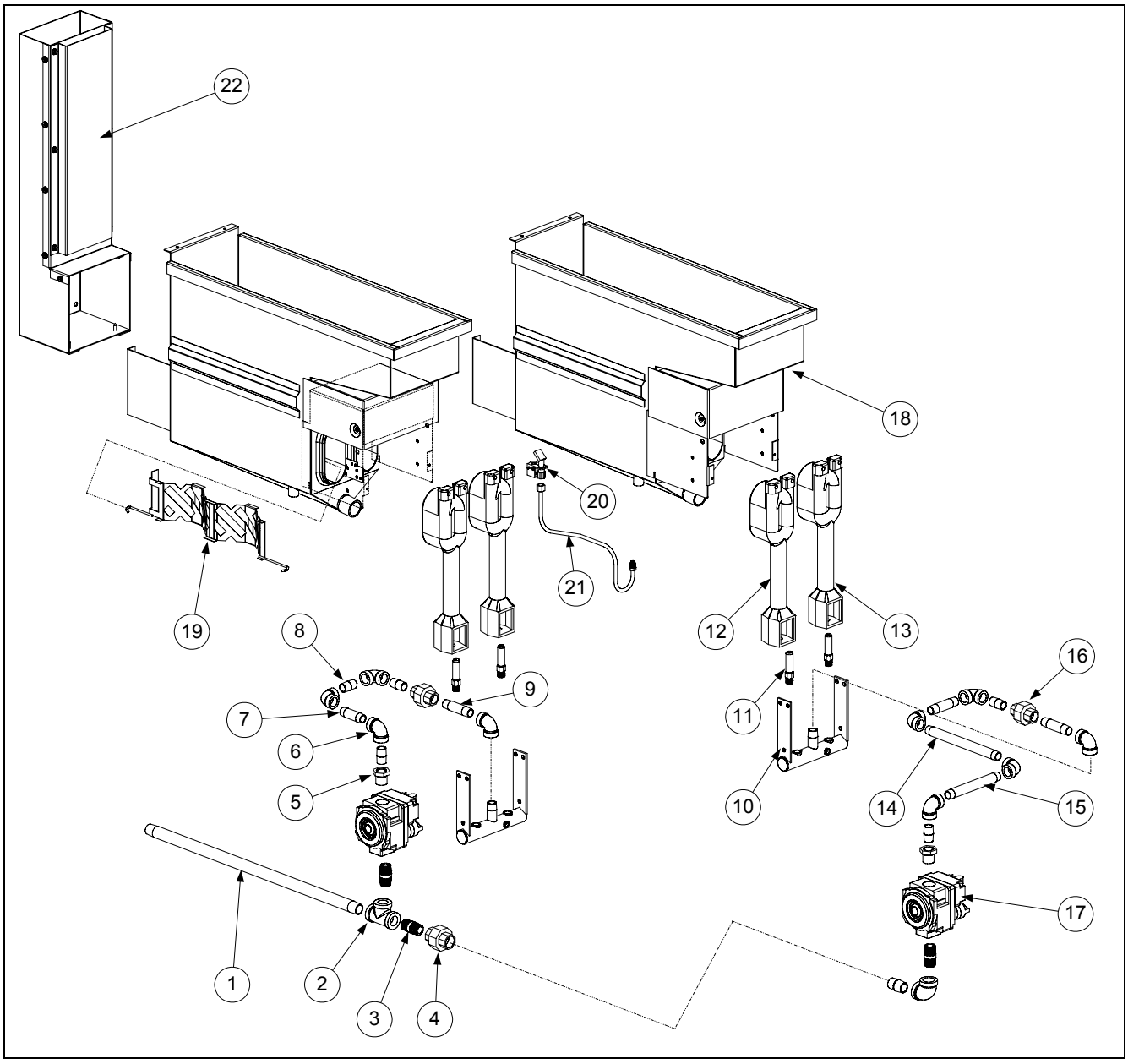
## 2.3 Component Box Components and Related Components (CE and Domestic- cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 826-2013 | Thermostat, Sunne ***(Use 807-1692 for CE)*** |
| * | 810-2047 | Spring, Spacer- Thermostat Capillary Bulb |
| * | 210-1302 | Clamp, Thermostat/High Limit Capillary Bulb *(Use 210-1433 for 2 hole)* |
| * | 200-1320 | Mounting Bracket, Thermostat & High-Limit |
| 2 | 810-2035 | Knob, Thermostat ***(Use 816-0139 for CE)*** |
| 3 | 200-1618 | Box, Thermostat- Single |
| 4 | 200-3217 | Cover, Thermostat Box- Single |
| 5 | 200-3277 | Box, Thermostat- Dual (Used in 20/50 Combination Systems) |
| 6 | 200-3906 | Cover, Thermostat Box- Dual (Used in 20/50 Combination Systems) |
| 7 | 810-2033 | Thermopile ***(Use 807-3565 for CE)*** |
| 8 | 810-1152 | Thermocouple (**CE ONLY**) ***(Use 812-1284 for Assembly)*** |
| 9 | 106-1768SP | ECO Connector (Honeywell Valves Only- **CE ONLY**) |
| * | 106-1879 | ECO Connector (Robertshaw Valves Only- **CE ONLY**) |
| 10 | 200-5479 | Bracket, Pilot Thermocouple |
| 11 | 810-2401 | Bracket, Thermopile |
| 12 | 810-1001 | Piezo Ignitor (Trigger) (*Wire Lead-807-3650) (Assembly-44970SP)* |
| * | 200-1868 | Piezo Bracket |
| * | 807-3540 | Electrode, Piezo CE ***(Use 812-1532 for modified Electrode)*** |
| 13 | 807-1999 | Transformer, Dual Voltage CE- Filtration System **(CE ONLY)** |
| * | 807-0800 | Transformer, 120/24 VAC- Filtration System |
| 14 | 807-3580 | Switch, Rocker- Manual Filter Power |
| 15 | 210-2786 | Guard, Switch (Optional- For Item 10) |
| 16 | 807-3516 | High-Limit Thermostat- Automatic Reset 435° F SM20/35,SR40/42 |
| * | 807-3560 | High-Limit Thermostat- Manual Reset 410° F **(CE)** |
| * | 807-3680 | High-Limit Thermostat- Manual Reset 450° F |
| * | 810-2046 | Spring, Spacer- High Limit Capillary Bulb |
| 17 | 807-1321 | Fuse Holder, Buss |
| * | 2747 | Fuse Holder, Slot-head—Safety **(CE ONLY)** |
| * | 807-3592 | Fuse 2A Slow-Blow (230V Systems) |
| * | 807-3750 | Fuse 5A (120V Systems) |

* Not Illustrated

## 2.4 Frypot and Burner System Components

### 2.4.1 SM220 and SM20/20/~ Systems




| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 813-0737 | Nipple, ½" NPT x 21" BM |
| * | 810-2043 | Clamp, Pipe- ½" BM Pipe |
| * | 809-0805 | Bolt, Pipe Clamp- ¼" -20 x ½" Hex |
| * | 200-1450 | Bracket, Gas-Supply Clamp Support (UFF-Equipped Systems) |

* Not Illustrated

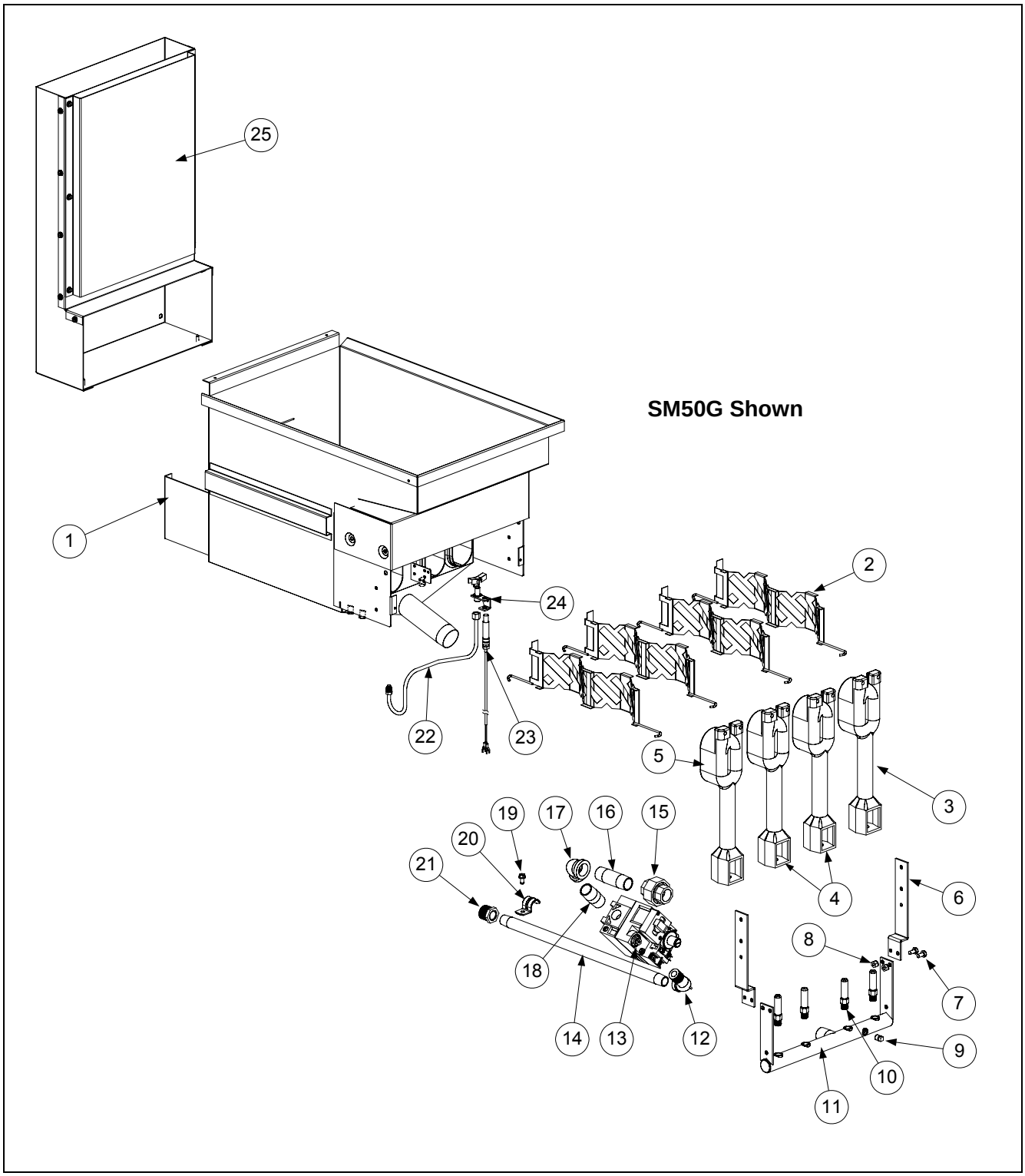
## 2.4.1 SM220 and SM20/20/~ Systems (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 2 | 813-0003 | Tee, ½" NPT BM |
| 3 | 813-0087 | Nipple, ½" NPT x 1-½" BM |
| 4 | 813-0173 | Union, ½" NPT BM |
| 5 | 813-0780 | Bushing, ⅜" NPT x ½" BM |
| 6 | 813-0631 | Elbow, ⅜" NPT 90° BM |
| 7 | 813-0676 | Nipple, ⅜" NPT x 2" BM |
| 8 | 813-0625 | Nipple, ⅜" NPT x Close BM |
| 9 | 813-0649 | Nipple, ⅜" NPT x 2-½" BM |
| 10 | 810-2352 | Manifold, Gas- **SM20G** |
| * | 200-1615 | Bracket, Manifold Mounting |
| 11 | 810-2050 | Orifice, Natural- #44 (2.18 mm)- **Domestic/International** |
| * | 810-0710 | Orifice, LP- #54 (1.40 mm)- **Domestic/International** |
| * | 810-2060 | Orifice, G20-G25- (2.40 mm)- **CE Only** |
| * | 810-2059 | Orifice, G31- (1.51 mm)- **CE Only** |
| 12 | 810-2151 | Burner, Left |
| 13 | 810-2150 | Burner, Right |
| * | 200-1374 | Bracket, Burner Mounting- **SM20G** |
| * | 200-1331 | Shield, Burner Heat- **SM20G** |
| 14 | 813-0668 | Nipple, ⅜" NPT x 7" BM |
| 15 | 813-0782 | Nipple, ⅜" NPT x 5" BM |
| 16 | 813-0781 | Union, ⅜" NPT BM |
| 17 | 807-3645 | Valve, Gas- Natural (Robertshaw MV) ½" in x ¾" out |
| * | 807-1603 | Valve, Gas- Natural Honeywell ½" in x ½" out |
| * | 810-2036 | Valve, Gas- Natural Honeywell ½" in x ¾" out |
| * | 807-2122 | Valve, Gas- Natural **CE** Honeywell |
| * | 810-2399 | Valve, Gas- Propane (Robertshaw MV) |
| * | 807-1604 | Valve, Gas- Propane Honeywell |
| * | 807-2121 | Valve, Gas- Propane **CE** Honeywell |
| * | 810-0975 | Knob, Gas Valve Honeywell |
| * | 810-0691 | Vent Tube 4" (Use 810-1166 for **CE** 3.86") |
| 18 | 826-1874 | Frypot Assembly- **SM20G**- M/S *obsolete use 826-1875* |
| * | 826-1875 | Frypot Assembly- **SM20G**- S/S |
| 19 | 200-5175 | Diffuser, Burner-Tube- **SM20G** |
| 20 | 810-2158 | Pilot Burner- **SM20G**- Natural(0.18 Orifice) **(Use 810-2526 for LP)** |
| * | 810-2689 | Pilot Assembly Honeywell w/ Piezo- Natural **(Use 810-2690 for LP)** |
| * | 106-4968 | Pilot Assembly w/ Piezo-Natural **SM20G** |
| 21 | 810-0703 | Gas Line, Pilot Supply- ¼" x 17-½" (CE -810-1172 - ¼" x 22") |
| * | 810-2602 | Gas Line, Pilot Supply- ¼" x 25" |
| 22 | 106-1583SP | **Flue Assembly- SM20G** |
| * | 200-1342 | Shield, Flue Heat- **SM20G** |
| * | 200-1344 | Front, Flue Box- **SM20G** |
| * | 200-1351 | Rear, Flue Box- **SM20G** |
| * | 200-3081 | Air Shutter (Use KIT00092SP for Air Shutter Kit) |

* Not Illustrated

SM 20 series began using Honeywell gas valves in July 2003.

## 2.4.2 SR Series, SM35G, SM40G and SM50G Systems



## 2.4.2 SR Series, SM35G, SM40G and SM50G Systems (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 12188-1 | Frypot- M/S (After 6/98)- **SR38G** *obsolete* |
| * | 12188-2 | Frypot- S/S (After 6/98)- **SR38G** *obsolete* |
| * | 12082NV | Frypot- M/S (P&S Prior to 6/98)- **SR38G** *obsolete* |
| * | 12202-1 | Frypot- M/S (Japan/Singapore)- **SR38G** *obsolete* |
| * | 12202-2 | Frypot- S/S (Japan/Singapore)- **SR38G** *obsolete* |
| * | 826-1865 | Frypot- S/S- **SR42G** *(Began using 1" drain Mar. 2003)* |
| * | 826-1871 | Frypot- S/S- **SR52G, SM50G** |
| * | 826-1867 | Frypot- S/S- **SM35G, SM40G** |
| 2 | 210-5185 | Diffuser, Burner Tube- **SR38G, SR42G, SM35G, SM40G** |
| * | 210-5175 | Diffuser, Burner Tube- **SM50G** |
| * | 210-5216 | Diffuser, Burner Tube- **SR52G** |
| 3 | 810-2150 | Burner, Right- **SR52G, SM50G** |
| * | 810-2039 | Burner, Right- **SR38G, SR42G, SM35G, SM40G** |
| 4 | 810-2149 | Burner, Center- **SR52G, SM50G** |
| * | 810-2038 | Burner, Center- **SR38G, SR42G, SM35G, SM40G** |
| 5 | 810-2151 | Burner, Left- **SR52G, SM50G** |
| * | 810-2037 | Burner, Left- **SR38G, SR42G, SM35G, SM40G** |
| * | 200-1329 | Bracket, Burner Mounting- **SR52G, SM50G** |
| * | 809-0459 | Bolts, Burner $^{5}/_{16}$" – 18x ¾" Hex Head Washer |
| * | 823-3600 | Support Assembly, Burner- **SM35G, SM40G** (Includes Burner Mounting Bracket & Heat Shield) |
| * | 200-1129 | Shield, Burner Heat- **SR42G** *not used after 12/10/04* |
| * | 200-1330 | Shield, Burner Heat- **SR52G, SM50 and 200-1331** |
| 6 | 200-1615 | Bracket, Manifold Mounting- **SR52G, SM50G** |
| * | 200-1311 | Bracket, Manifold Mounting- **SR38G, SR42G** |
| 7 | 809-0428 | Bolt, ¼" -20 x ½" Hex Head |
| 8 | 809-0823 | Nut, Nylock- ¼" -20 |
| 9 | 813-0705 | Plug, Brass- ⅛" Square Head |
| 10 | | **Orifice- Domestic/International** |
| * | 810-2048 | Orifice, Natural- #39 (2.53 mm)- **SR52G, SM50G,** |
| * | 810-2132 | Orifice, Natural- #37 (2.64 mm)- **SR38G** |
| * | 810-2040 | Orifice, Natural- #35 (2.80 mm)- **SR42G, SM35G, SM40G** |
| * | 810-2497 | Orifice, LP- #55 (1.32 mm)- **SR52G, SR62G, SM20G, SM50G** |
| * | 810-2059 | Orifice, LP- #53 (1.51 mm)- **SR52G, SM50G,** |
| * | 810-2063 | Orifice, LP- #52 (1.61 mm)- **SR38G** |
| * | 810-2064 | Orifice, LP- #51 (1.70 mm)- **SR42G, SM35G, SM40G** |
| * | 810-2400 | Orifice, LP- #16 (.016)- Pilot **SR52** |
| * | | **Orifice- CE Only** |
| * | 810-2060 | Orifice, G20-G25- (2.40 mm)- All Millivolt Fryers in This Section |
| * | 810-2059 | Orifice, G31- (1.51 mm)- All Millivolt Fryers in This Section |
| 11 | 823-3618 | Manifold, Gas- **SR52G, SM50G** |
| * | 810-2034 | Manifold, Gas- **SR38G, SR42G** |
| * | 823-3619 | Manifold, Gas- **SM35G, SM40G** |

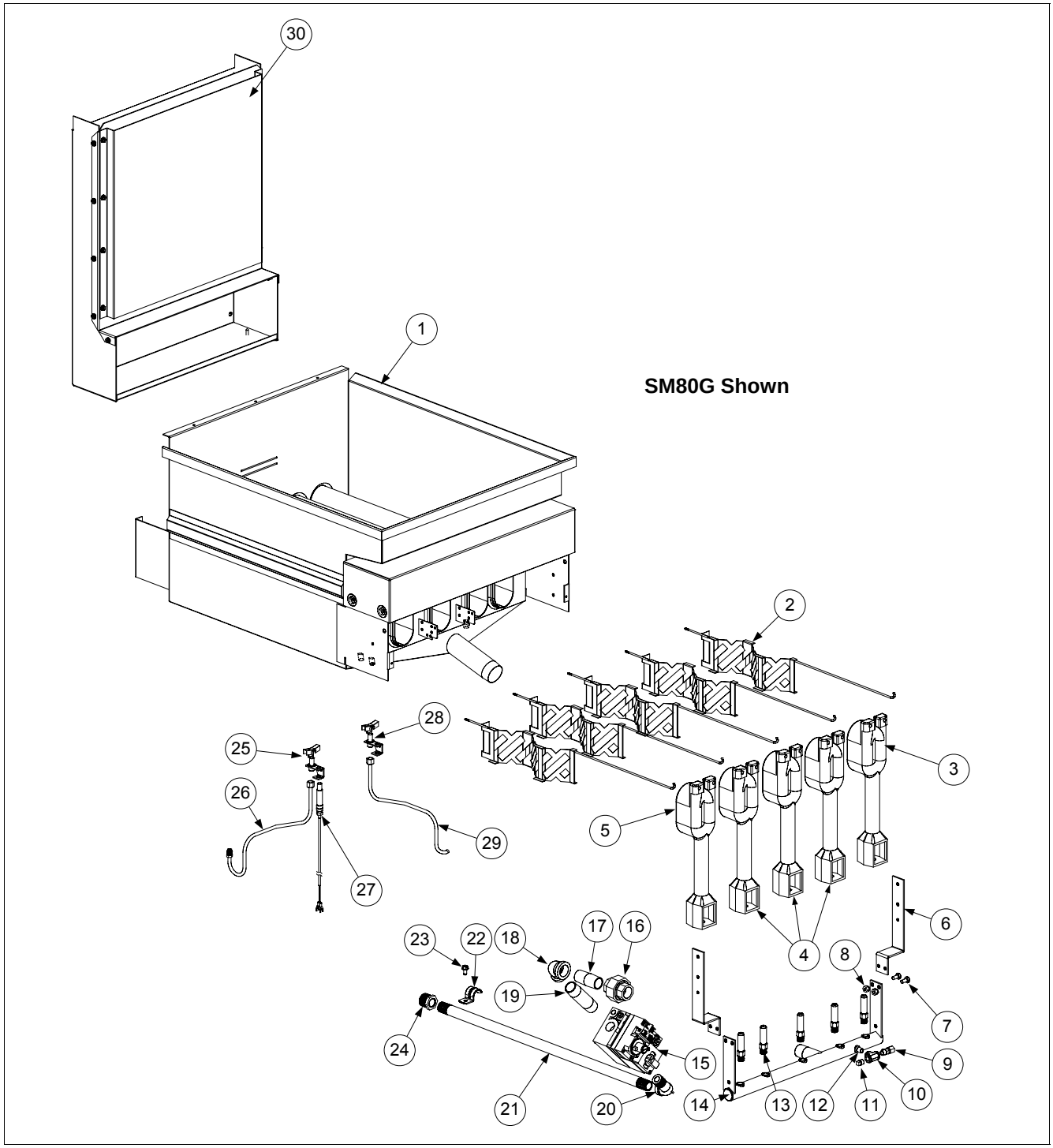
* Not Illustrated

## 2.4.2 SR Series, SM35G, SM40G and SM50G Systems (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| | | **Gas Valve and Related Plumbing- SM50G – Plumbing Will Vary From Model to Model- Use the Following Parts As A Reference When Obtaining Parts For Systems in This Section Other Than SM50G** |
| 12 | 813-0165 | Elbow, Street- ½" NPT 90° BM |
| 13 | 810-2036 | Valve, Gas- Natural, Honeywell- **Domestic/International** ½" in x ¾" out |
| * | 807-1603 | Valve, Gas- Natural, Honeywell- ½" in x ½" out Started using Feb. 2003 |
| * | 807-3648 | Valve, Gas- Natural, Honeywell- ¾" in x ¾" out Started using Feb. 2003 Export |
| * | 807-3645 | Valve, Gas- Natural, Robertshaw- ½" in x ¾" out |
| * | 807-3549 | Valve, Gas- LP, Honeywell- **Domestic/International** |
| * | 807-1604 | Valve, Gas- LP, Honeywell- ½" in x ½" out Started using Feb. 2003 |
| * | 807-3553 | Valve, Gas- LP, Honeywell- ¾" in x ¾" out |
| * | 810-1155 | CE Adaptor Kit, Honeywell Valve |
| * | 807-2122 | Valve, Gas- Natural, Honeywell- **CE Only** |
| * | 807-2121 | Valve, Gas- LP, Honeywell- **CE Only** |
| * | 807-1846 | Valve, Kit – Natural to Propane Conversion |
| 14 | 813-0418 | Nipple, ½" NPT x 17" BM- **SM50G** |
| * | 813-0670 | Nipple, ½" NPT x 19" BM (Measure To Confirm Length) |
| * | 813-0585 | Nipple, ½" NPT x 20-½" BM (Measure To Confirm Length) |
| * | 813-0737 | Nipple, ½" NPT x 21" BM (Measure To Confirm Length) |
| 15 | 813-0174 | Union- ¾" NPT BM |
| 16 | 813-0254 | Nipple, ¾" NPT x 3" BM- **SM50G** |
| 17 | 813-0066 | Elbow- ¾" NPT 90° BM |
| 18 | 813-0112 | Nipple, ¾" NPT x 2" BM- **SM50G** |
| 19 | 809-0805 | Bolt, ¼"-20 x ½" Hex Head |
| 20 | 810-2043 | Clamp, Pipe- ½" |
| * | 200-1450 | Bracket, Gas-Supply Clamp Support (UFF-Equipped Systems) |
| 21 | 813-0031 | Bushing, ¾" NPT x ½" NPT BM |
| 22 | 810-0703 | Gas Line, Pilot Supply- ¼" x 17-½" (For **CE** use 810-1172 **23"** or 810-2602 **25"**) |
| 23 | 810-2033 | Thermopile- Non-CE |
| * | 807-3565 | Thermopile- **CE Only** ( Thermocouple 810-1152) |
| 24 | 810-2032 | Burner, Pilot- Natural (Use 106-0692SP for Assembly. Includes item 22, 23 and 24) |
| * | 810-2155 | Burner, Pilot- LP |
| 25 | 106-1742SP | **Flue Assembly- SR52G, SM50G** |
| * | 200-2872 | Shield, Flue Heat- **SR52G, SM50G** |
| * | 200-1343 | Front, Flue Box- **SR52G, SM50G** |
| * | 200-1350 | Rear, Flue Box- **SR52G, SM50G** |
| * | 12203 | **Flue Assembly- SR38G** |
| * | 12-0363 | Shield, Flue Heat- **SR38G** *obsolete* |
| * | 12-0362 | Front, Flue Box- **SR38G** *obsolete* |
| * | 12-0361 | Rear, Flue Box- **SR38G** *obsolete* |
| * | 106-0696SP | **Flue Assembly- SR42G** |
| * | 200-1304 | Front, Flue Box- **SR42G** |
| * | 200-1303 | Rear, Flue Box- **SR42G** |
| * | 106-0954SP | **Flue Assembly- SM35G, SM40G** |
| * | 200-1690 | Shield, Flue Heat- **SM35G** |
| * | 200-1701 | Front, Flue Box- **SM35G** |
| * | 200-1678 | Rear, Flue Box- **SM35G** |
| * | 449-41001 | Garland SM50 Drop In Assembly- Natural |
| * | 449-4100001 | Garland SM50 Drop In Assembly- Propane |

* Not Illustrated

## 2.4.3 SR62, SM60G and SM80G Systems



## 2.4.3 SR62, SM60G and SM80G Systems (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 823-3506SP | Frypot- M/S- **SM80G (After 10/99)** *obsolete use 823-3494SP* |
| * | 823-3494SP | Frypot- S/S- **SM80G (After 10/99) 1¼" (Use 823-3396SP for 1 ½")** |
| * | 20004-3SK | Frypot- M/S- **SM80G (Prior To 10/99)** *obsolete use 826-1891* |
| * | 826-1891 | Frypot- S/S- **SM80G (Prior To 10/99)** |
| * | 826-1819 | Frypot- M/S- **SM60G** *obsolete use 826-1802* |
| * | 826-1802 | Frypot- S/S- **SM60G, SR62G (Use 823-3511SP for SM160G)** |
| 2 | 823-3404 | Diffuser, Burner Tube- **SM80G** |
| * | 210-5215 | Diffuser, Burner Tube- **SM60G, SR62G** |
| 3 | 810-2150 | Burner, Right- **SM60G, SM80G, SR62G** |
| 4 | 810-2149 | Burner, Center- **SM60G, SM80G, SR62G** |
| 5 | 810-2151 | Burner, Left- **SM60G, SM80G, SR62G** |
| * | 200-2734 | Bracket, Burner Mounting- **SM80G** |
| * | 200-2738 | Bracket, Burner Mounting- **SM60G, SR62G** |
| * | 200-2707 | Shield, Burner Heat- **SM80G** |
| * | 200-2746 | Shield, Burner Heat- **SM60G, SR62G** |
| 6 | 200-1314 | Bracket, Manifold Mounting- **SM80G** |
| * | 200-1615 | Bracket, Manifold Mounting- **SM60G, SR62G** |
| 7 | 809-0428 | Bolt, ¼"-20 x ½" Hex Head |
| 8 | 809-0823 | Nut, Nylock- ¼"-20 |
| 9 | 810-2138 | Valve, Trailing Pilot- **SM60G, SM80G, SR62G adjustment valve** |
| 10 | 813-0642 | Tee, ⅛" NPT |
| 11 | 813-0705 | Plug, Brass- ⅛" Square Head |
| 12 | 813-0643 | Nipple, ⅛" NPT x Close BM |
| 13 | | **Orifice- Domestic/International** |
| * | 810-2062 | Orifice, Natural- #38 (2.58 mm)- **SM80G** |
| * | 810-2048 | Orifice, Natural- #39 (2.53 mm)- **SM60G, SR62G** |
| * | 810-2063 | Orifice, LP- #52 (1.61 mm)- **SM80G** |
| * | 810-2059 | Orifice, LP- #53 (1.51 mm)- **SM60G, SR62G** |
| * | | **Orifice- CE Only** |
| * | 810-2060 | Orifice, G20-G25- (2.40 mm)- <u>All Millivolt Fryers in This Section</u> |
| * | 810-2059 | Orifice, G31- (1.51 mm)- <u>All Millivolt Fryers in This Section</u> |
| 14 | 823-3617 | Manifold, Gas- **SM60G, SM80G, SR62G** |
| 15 | 810-2036 | Valve, Gas- Natural, Honeywell- **Domestic/Intl** ½" in x ¾" out |
| * | 807-2122 | Valve, Gas- Natural, Honeywell- **CE Only** |
| * | 807-3648 | Valve, Gas- Natural and MFG, Honeywell ¾" in x ¾" out (Export) |
| * | 807-3645 | Valve, Gas- Natural, Robertshaw MV ½" in x ¾" out |
| * | 807-3549 | Valve, Gas- LP, Honeywell- **Domestic/Intl** |
| * | 807-2121 | Valve, Gas- LP, Honeywell- **CE Only** |
| * | 810-2399 | Valve, Gas- LP, Robertshaw MV |
| 16 | 813-0174 | Union- ¾" NPT BM |
| 17 | 813-0635 | Nipple, ¾" NPT x 2-½" BM |
| 18 | 813-0066 | Elbow- ¾" NPT 90° BM |
| 19 | 813-0743 | Nipple, ¾" NPT x 3-½" BM |
| 20 | 813-0165 | Elbow, Street- ½" NPT 90° BM |
| 21 | 813-0670 | Nipple, ½" NPT x 19" BM (<u>Measure To Confirm Length</u>) |
| * | 813-0585 | Nipple, ½" NPT x 20-½" BM (<u>Measure To Confirm Length</u>) |
| * | 813-0737 | Nipple, ½" NPT x 21" BM (<u>Measure To Confirm Length</u>) |

* Not Illustrated

## 2.4.3 SR62, SM60G and SM80G Systems (cont.)

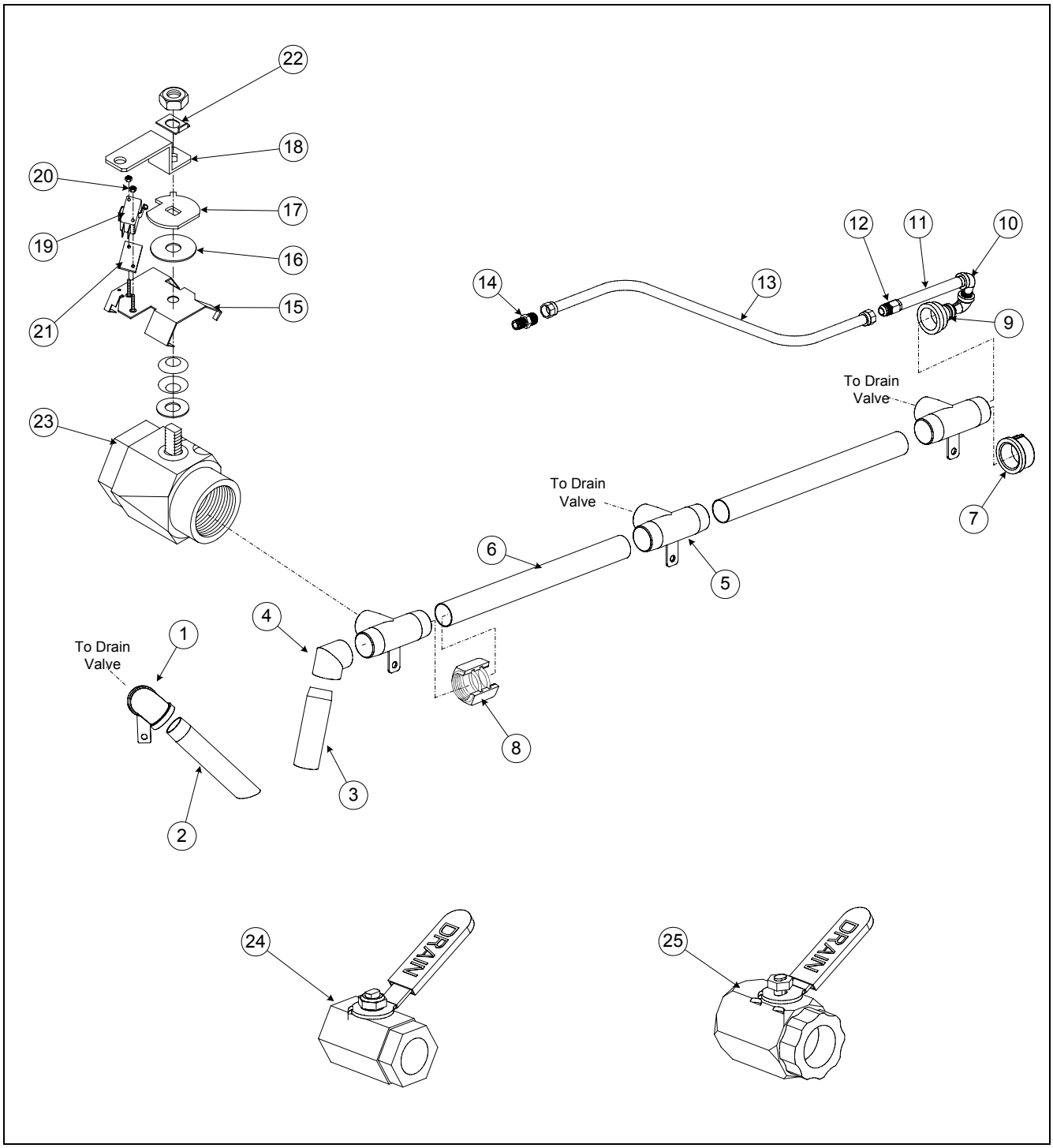
| ITEM | PART # | COMPONENT |
|---|---|---|
| 22 | 810-2043 | Clamp, Pipe- ½" |
| 23 | 809-0805 | Bolt, Pipe Clamp- ¼"-20 x ½" Hex |
| * | 200-1450 | Bracket, Gas-Supply Clamp Support (UFF-Equipped Systems) |
| 24 | 813-0031 | Bushing, ¾" NPT x ½" NPT BM |
| 25 | 810-2032 | Burner, Pilot- Natural *(Use 106-0692SP for Assembly)* |
| * | 810-2155 | Burner, Pilot- LP *(Use 106-1696SP for Assembly)* |
| 26 | 810-0703 | Gas Line, Main Pilot Supply- ¼" x 17-½" |
| * | 810-1172 | Gas Line, Pilot Supply- ¼" x 23" **CE** |
| * | 810-2602 | Gas Line, Pilot Supply- ¼" x 25" **CE** |
| 27 | 810-2033 | Thermopile- Non-CE |
| * | 807-3565 | Thermopile- **CE Only** |
| 28 | 810-2032 | Burner, Pilot- Natural & MFG (Also Used For Main Pilot) |
| * | 106-0692 | Burner, Pilot Assembly- Natural & MFG |
| * | 810-2155 | Burner, Pilot- LP (Also Used For Main Pilot) |
| 29 | 812-0703 | Gas Line, Trailing Pilot Supply- ¼" x 17-½" (Cut To Length) |
| 30 | 106-1442SP | **Flue Assembly- SM80G** |
| * | 200-1316 | Shield, Flue Heat- **SM80G** |
| * | 200-1347 | Front, Flue Box- **SM80G** |
| * | 200-1349 | Rear, Flue Box- **SM80G** |
| * | 106-0997SP | **Flue Assembly- SM60G, SR62G** |
| * | 200-1325 | Shield, Flue Heat- **SM60G, SR62G** |
| * | 200-1339 | Front, Flue Box- **SM60G, SR62G** |
| * | 200-1773 | Rear, Flue Box- **SM60G, SR62G** |

* Not Illustrated

## 2.5 Oil Drain Manifold Componets

### 2.5.1 1½" Oil Drain Manifold, Drain Flush and Drain Valve Components*

*Typical components illustrated below. Components will vary according to system.



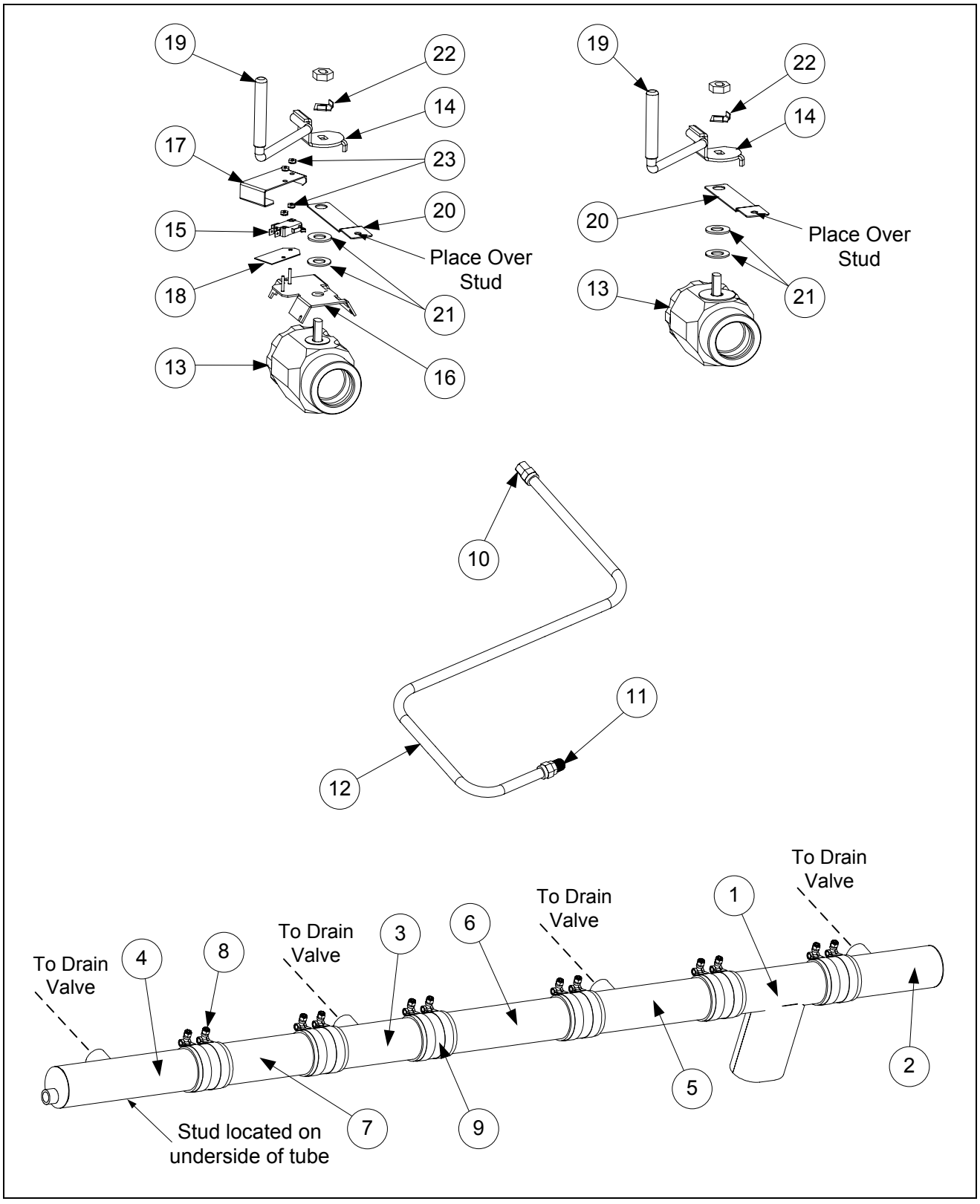
## 2.5.1 Oil Drain Manifold, Drain Flush and Drain Valve Components (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 823-3565 | Elbow, with Bracket (LH)- 1-¼"- UFF 50 |
| * | 823-3566 | Elbow, with Bracket (RH)- 1-¼"- UFF 50 |
| 2 | 812-1524 | Drain Pipe, Left Side (Use 823-3418 for Chili's) |
| 3 | 813-0784 | Drain Pipe, Right Side 1 ½" x 6" |
| 4 | 813-0829 | Elbow, 1-½" NPT 75° |
| 5 | 813-0748 | Tee, 1-½" NPT x 1-¼" BM With Handle Bracket |
| 6 | 200-1827 | Drain Manifold Tube- 1-½" x 13-¼" |
| 7 | 813-0659 | Pipe Cap, 1-½" |
| 8 | 809-0884 | Nut, Slip Joint- 1-½" |
| * | 816-0544 | O-ring (Slip-Joint Nut) |
| 9 | 813-0686 | Bell Reducer, ½" NPT x 1-½" |
| 10 | 813-0165 | Elbow, Street- ½" NPT 90° |
| 11 | 813-0672 | Nipple, ½" NPT x 8" BM |
| 12 | 810-1669 | Adapter, ⅝" O.D. x ½"- Female |
| 13 | 810-1069 | Flex Line, ⅝" x 29-½ " |
| 14 | 810-1668 | Adapter, ⅝" O.D. x ½"- Male |
| | | **Drain Valve Components** |
| 15 | 106-1401 | Bracket, Microswitch (Optional On SUFF/UFF Units) |
| 16 | 200-1617 | Washer, Drain Valve (Use Without Microswitch) |
| 17 | 210-2029 | Bracket, Activator- Microswitch (Also Used On Valves Without Microswitch As A Handle-Stop) |
| 18 | 210-4727 | Handle (Actuator), Drain Valve |
| * | 823-3440 | Handle, Push/Pull- Drain (With Cap) |
| * | 809-0885 | Washer, ⅜" x 1" x .083" |
| * | 809-0843 | Pin, Cotter |
| * | 816-0547 | Cap, Vinyl-Red |
| 19 | 807-2104 | Microswitch (Optional On SUFF/UFF Units) |
| 20 | 809-0842 | Nut, Nylock- #4-40 (Microswitch To Bracket) |
| 21 | 816-0220 | Insulation, Microswitch |
| 22 | 200-1257 | Retainer, Nut |
| 23 | 810-2127 | Drain Valve, 1-½" Full Port (With Washers & Nut) |
| 24 | 810-2052 | Drain Valve, 1-¼" (1" Standard Port) |
| * | 810-2442 | Handle, Valve Lever |
| * | 810-1338 | Drain Valve, 1" **SM20G, SR42G** *see note below* |
| * | 210-3902 | Handle, Valve Lever (**For 810-1338 Only**)- **SM20G** |
| * | 106-1417SP | Drain Valve Assembly 1" RH and LH |
| * | 813-0138 | Nipple, 1" NPT x Close (To Adapt To 1-¼" Extended Drain Nipple) |
| * | 813-0716 | Bushing, 1" NPT x 1-¼" BM (To Adapt To 1-¼" Extended Drain Nipple) |
| * | 813-0406 | Coupling, 1-¼" NPT x 2" (To Adapt To 1-¼" Extended Drain Nipple) |
| 25 | 810-2126 | Drain Valve, 1-¼" Full-Port (Use 106-2439 for Assembly) |
| * | 812-1226SP | Nipple, Drain- 1-¼" Painted- **SM Series Fryers (use 813-0276 for SM20)** |
| * | 813-0392 | Nipple, Drain- 1-¼" NPT x 8" BM- **All SR Series Fryers except SR42 w/ 1"** |
| * | 812-1681 | Nipple, Drain- 1-¼" x 5" NPT |
| * | 813-0870 | Nipple, Drain- 1-¼" x 10" NPT |
| * | 813-0669 | Nipple, Drain- 1" x 8" (Use 812-1668 for 5"-**SR42**) (Use 813-0605 for 9"- **SR62**) |

* Not Illustrated

Note: In Mar. 2003 SR42G went to 1" drain valves.

## 2.5.2 3" Oil Drain Manifold, Drain Flush and Drain Valve Components



## 2.5.2 3” Oil Drain Manifold, Drain Flush & Drain Valve Components (cont.)

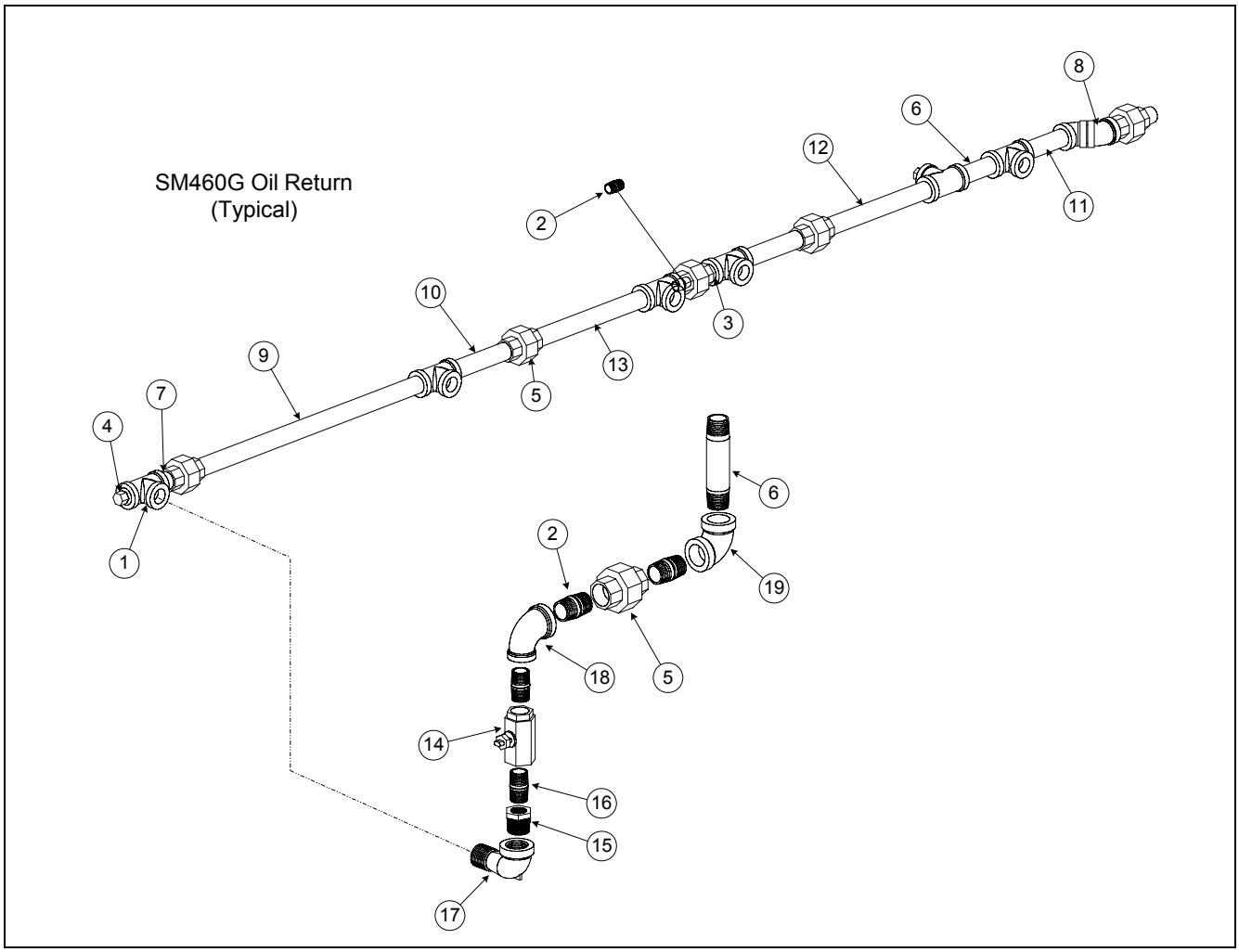
| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 823-4712 | Tube, 3” Oval Dump |
| 2 | 823-4681 | Tube, 3” Right Drain (closed end) |
| 3 | 823-4682 | Tube, 3” Center Drain (open ends) |
| 4 | 823-4844 | Tube, 3” Left Drain (closed end) |
| 5 | 823-5188 | Tube, 3” Right Filter (open ends) |
| 6 | 200-6603 | Tube, 3” Joiner (11.5”) |
| 7 | 200-9365 | Tube, 3” Joiner (8.63”) |
| 8 | 809-0969 | Clamp, T-bolt |
| 9 | 816-0625 | Boot/Sleeve |
| | 106-1726 | **Flush Oil Drain Line** |
| 10 | 810-1669 | Adapter, Female ⅝” O.D. x ½” long |
| 11 | 810-1668 | Adapter, Male ⅝” O.D. x ½” long |
| 12 | 810-1056 | Flexline, ⅝” O.D. x 52.5” long |
| | 106-3976 | **Drain Valve Assembly, 1½” Without Microswitch** |
| | 106-3977 | **Drain Valve Assembly, 1½” With Microswitch** |
| 13 | 810-2783 | Drain Valve, 1½” Full Port with O-ring |
| 14 | 823-4734 | Handle, Drain Valve Rotating |
| 15 | 807-2104 | Microswitch, CE Micro-roller Lever |
| 16 | 106-1401 | Microswitch Bracket Assembly |
| 17 | 200-4402 | Guard, Drain Microswitch |
| 18 | 816-0220 | Insulation, RF Switch |
| 19 | 816-0547 | Cap, Red Vinyl for Handle |
| 20 | 200-6116 | Strap, 1½” (holds tube to valve via the stud) |
| 21 | 200-1617 | Washer, Drain Microswitch |
| 22 | 200-1257 | Retainer, Drain Valve |
| 23 | 826-1366 | Nut, 4-40 Keps Hex w/ External Teeth (Pkg. of 25) |
| * | 816-0630 | Cap, Vinyl (one per clamp, covers T-bolt threads) |

* Not Illustrated

## 2.6 Oil Return Manifold Components

### 2.6.1 Oil Return Manifold Components; Fryers with 1½" Drains*

*Typical components illustrated below. Components will vary according to system.



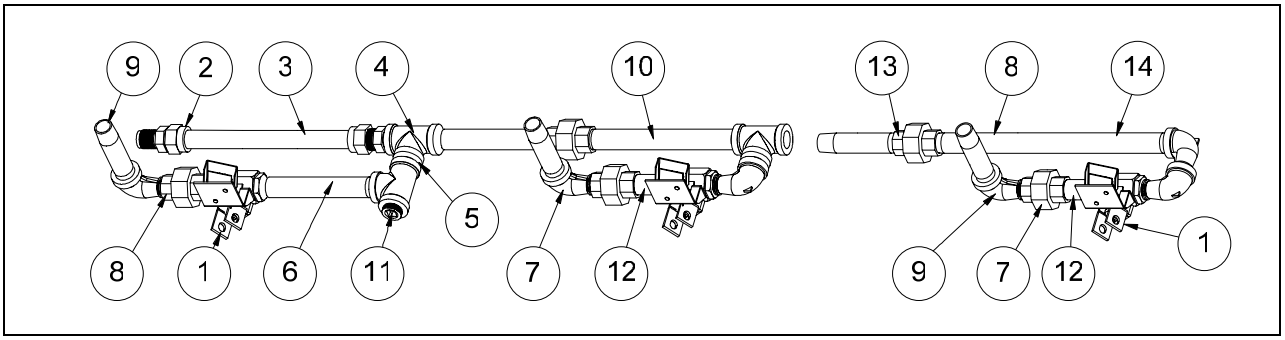

| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 813-0003 | Tee, ½" x ½" x ½" BM |
| 2 | 813-0022 | Nipple, ½" x Close NPT BM |
| 3 | 813-0087 | Nipple, ½" x 1-½" NPT BM |
| 4 | 813-0156 | Plug, ½" NPT Hex Head BM |
| 5 | 813-0173 | Union, ½" NPT BM |
| 6 | 813-0247 | Nipple, ½" x 3-½" NPT BM |
| 7 | 813-0298 | Nipple, ½" x 2" NPT BM |
| 8 | 813-0345 | Elbow, ½"- 45° |
| 9 | 813-0368 | Nipple, ½" x 16" NPT BM |
| 10 | 813-0646 | Nipple, ½" x 5" NPT BM |
| 11 | 813-0654 | Nipple, ½" x 4" NPT BM |
| 12 | 813-0672 | Nipple, ½" x 8" NPT BM |

## 2.6.1 Oil Return Manifold Components; Fryers with 1½" Drains (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 13 | 813-0673 | Nipple, ½" x 8-½" NPT BM |
| 14 | 810-2125 | Oil Return Valve, ⅜" |
| * | 810-0051 | Coupling, ½" NPT x 1-$^{7}/_{16}$" to adapt return hose to valve |
| * | 200-1143 | Retainer, Oil Return Valve Nut |
| * | 809-0877 | Nut, Oil Return Valve |
| 15 | 813-0006 | Bushing, Hex- ½" x ⅜" NPT BM |
| 16 | 813-0625 | Nipple, ⅜" x Close NPT BM |
| 17 | 813-0165 | Elbow, Street- ½" x ½" NPT 90° BM |
| 18 | 813-0634 | Elbow, ½" x ⅜" NPT 90° BM |
| 19 | 813-0062 | Elbow, ½" NPT 90° BM |
| * | 106-2568SP | Wash Down Hose and Nozzle Assembly |

* Not Illustrated

## 2.6.2 Oil Return Manifold Components; Fryers with 3” Drains



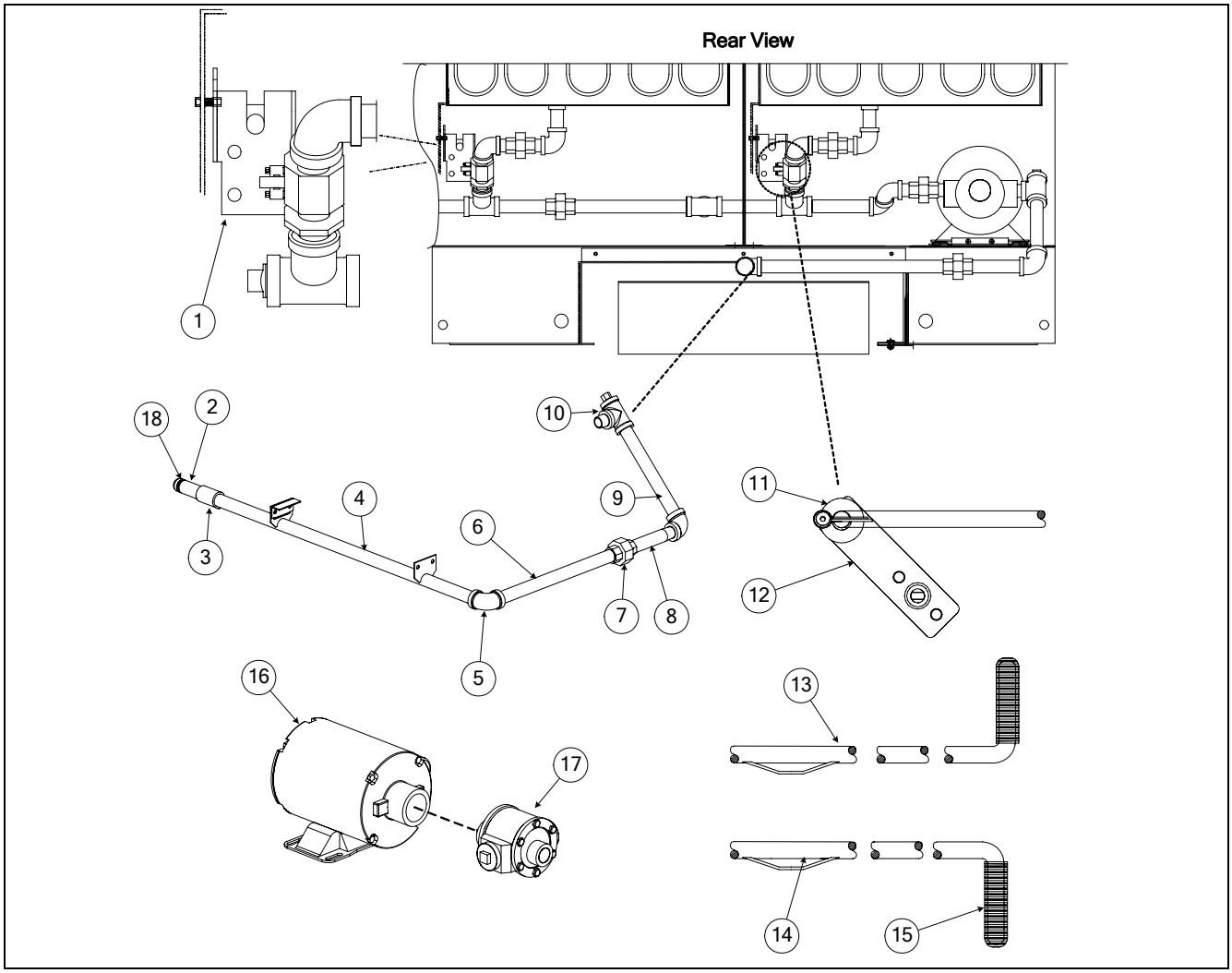

| ITEM | PART # | COMPONENT |
|---|---|---|
| | 106-4100 | Oil Return Assembly – Middle |
| | 106-4101 | Oil Return Assembly – End |
| 1 | 106-4006 | Valve Assembly, ½” Oil Return (see Page 2-25) |
| * | 106-3997 | Valve Assembly (use with wand) |
| * | 106-5516 | Valve Assembly, 3-way Oil Return |
| 2 | 810-1668 | Adapter, Male ⅝” OD x ½” |
| 3 | 810-2320 | Flexline, ⅝” x 9.00” Long |
| 4 | 813-0003 | Tee, ½” x ½” x ½” BM |
| 5 | 813-0022 | Nipple, ½” x Close NPT BM |
| 6 | 813-0096 | Nipple, ½” x 6.00” NPT BM |
| 7 | 813-0165 | Elbow, Street ½” x ½” NPT 90º BM |
| 8 | 813-0173 | Union, ½” NPT |
| 9 | 813-0247 | Nipple, ½” x 3.50” NPT BM |
| 10 | 813-0362 | Nipple, ½” NPT x 7.50” BM |
| 11 | 813-0463 | Plug, ½” Counter Sink |
| 12 | 813-0661 | Nipple, ½” x 2.25” NPT BM |
| 13 | 813-0654 | Nipple, ½” x 4.00” NPT BM |
| 14 | 813-0597 | Nipple, ½” x 11.50” NPT BM |
| * | 810-2125 | Ball Valve, ⅜” Drain |
| * | 813-0006 | Bushing, ½” to ⅜” NPT BM Hex Reducing |
| * | 813-0062 | Elbow, ½” 90º BM |
| * | 810-1067 | Flexline, 8.50” Oil Return |
| * | 813-0087 | Nipple, ½” x 1.50” NPT BM |
| * | 813-0460 | Nipple, ½” x 3.00” NPT BM |
| * | 813-0625 | Nipple, ⅜” NPT x CL Black CLS |
| * | 813-0672 | Nipple, ½” x 8.00” NPT BM |
| * | 813-0607 | Nipple, ½” x 23.50” NPT BM |
| * | 813-0099 | Nipple, ½” x 7.00” NPT BM |
| * | 813-0845 | Nipple, ½” x 29.75” NPT BM |
| * | 813-0646 | Nipple, ½” x 5.00” NPT BM |
| * | 813-0373 | Nipple, ½” x 11.00” NPT BM |
| * | 813-0298 | Nipple, ½” x 2.00” NPT BM |
| * | 813-0098 | Nipple, ½” x 6.50” NPT BM |
| * | 813-0742 | Nipple, ½” x 5.50” NPT BM |
| * | 813-0515 | Nipple, ½” x 12.00” NPT BM |
| * | 813-0265 | Nipple, ½” x 2.50” NPT BM |
| * | 813-0093 | Nipple, ½” x 4.00” NPT BM |

* Not Illustrated

## 2.7 Oil Return and Oil Flush Components

### 2.7.1 Oil Return and Oil Flush Components; Fryers with 1½" Drains*

*Typical components illustrated below. Components will vary according to system.

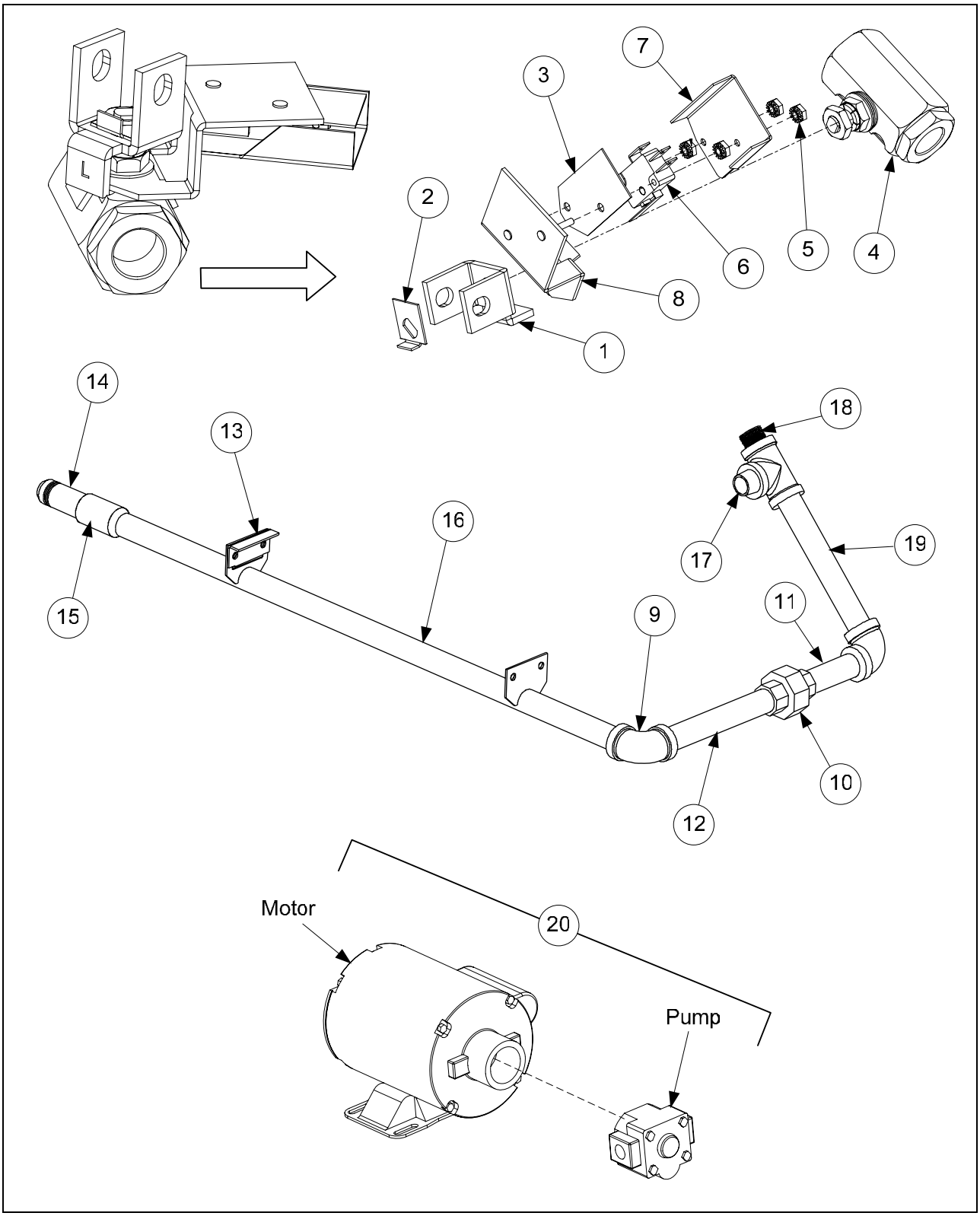


## 2.7.1 Oil Return and Oil Flush Components; Fryers with 1½" Drains (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | | **Microswitch Bracket Assembly, Oil Return** |
| * | 201-1233 | Bracket, Oil Return Microswitch- Left |
| * | 202-1233 | Bracket, Oil Return Microswitch- Right |
| * | 810-2144 | Spacer, Aluminum, 4-40- ¼" x 3/8" |
| * | 807-2104 | Microswitch, Oil Return |
| * | 809-0846 | Screw, 4-40 x 1" Slotted Head |
| * | 809-0842 | Nut, Nylock- 4-40 |
| * | 200-1341 | Bracket, Microswitch Rod |
| * | 809-0360 | Screw, #8 x ⅜" Hex Washer Slotted Head |
| * | 809-0803 | Bolt, ¼"-20 x ¾" Hex Head Grade 5 |
| * | 809-0823 | Nut, Nylock, ¼"-20 |
| * | 809-0070 | Nut, ¼"-20 Hex S/S |
| 2 | 810-0697 | Disconnect, Male- Suction Tube |
| 3 | 813-0608 | Coupling, Full- ½" NPT BM |
| 4 | 823-3188 | Suction Manifold Assembly |
| 5 | 813-0062 | Elbow, 90° BM |
| 6 | 813-0515 | Nipple, ½" x 12" NPT BM |
| 7 | 813-0173 | Union, ½" NPT BM |
| 8 | 813-0251 | Nipple, ½" x 4-½" NPT BM |
| 9 | 813-0672 | Nipple, ½" x 8" NPT BM |
| 10 | | **Oil Suction Start Fitting** |
| * | 813-0022 | Nipple- ½" NPT x Close |
| * | 813-0156 | Plug, ½" NPT Hex Head |
| * | 813-0003 | Tee, ½" NPT BM |
| 11 | 809-0885 | Washer, ⅜" x 1" x .083" |
| * | 809-0843 | Pin, Cotter- Plated |
| 12 | 823-3344 | Handle (Actuator), Oil Return Valve |
| 13 | 823-3187 | Handle, Oil Return- Left Fryer-UFF System |
| 14 | 823-3198 | Handle, Oil Return- Right Fryer-UFF System |
| * | 823-3481 | Handle, Oil Flush Valve |
| 15 | 816-0548 | Cap, Oil Return Handle- Yellow |
| * | 816-0549 | Cap, Oil Flush Handle- Blue |
| 16 | 810-2100 | Motor, Pump- 120-230V |
| * | 826-1987 | Motor, Pump Assembly 5 GPM |
| 17 | 810-2098 | Pump, 8 GPM |
| * | 810-2252 | Pump, 5 GPM |
| * | 210-1650 | Oil Deflector, Oil Return |
| 18 | 826-1392 | O-Rings (Pkg. of 5) |
| * | 106-2949SP | Line Assembly, Garland Pump Suction |
| * | KIT4678SP | Wash Down Hose Fittings Kit |
| * | 807-3593 | Power Cord |
| * | 807-3611 | Relay, Filter 24A DPDT |

* Not Illustrated

## 2.7.2 Oil Return and Oil Flush Components; Fryers with 3” Drains



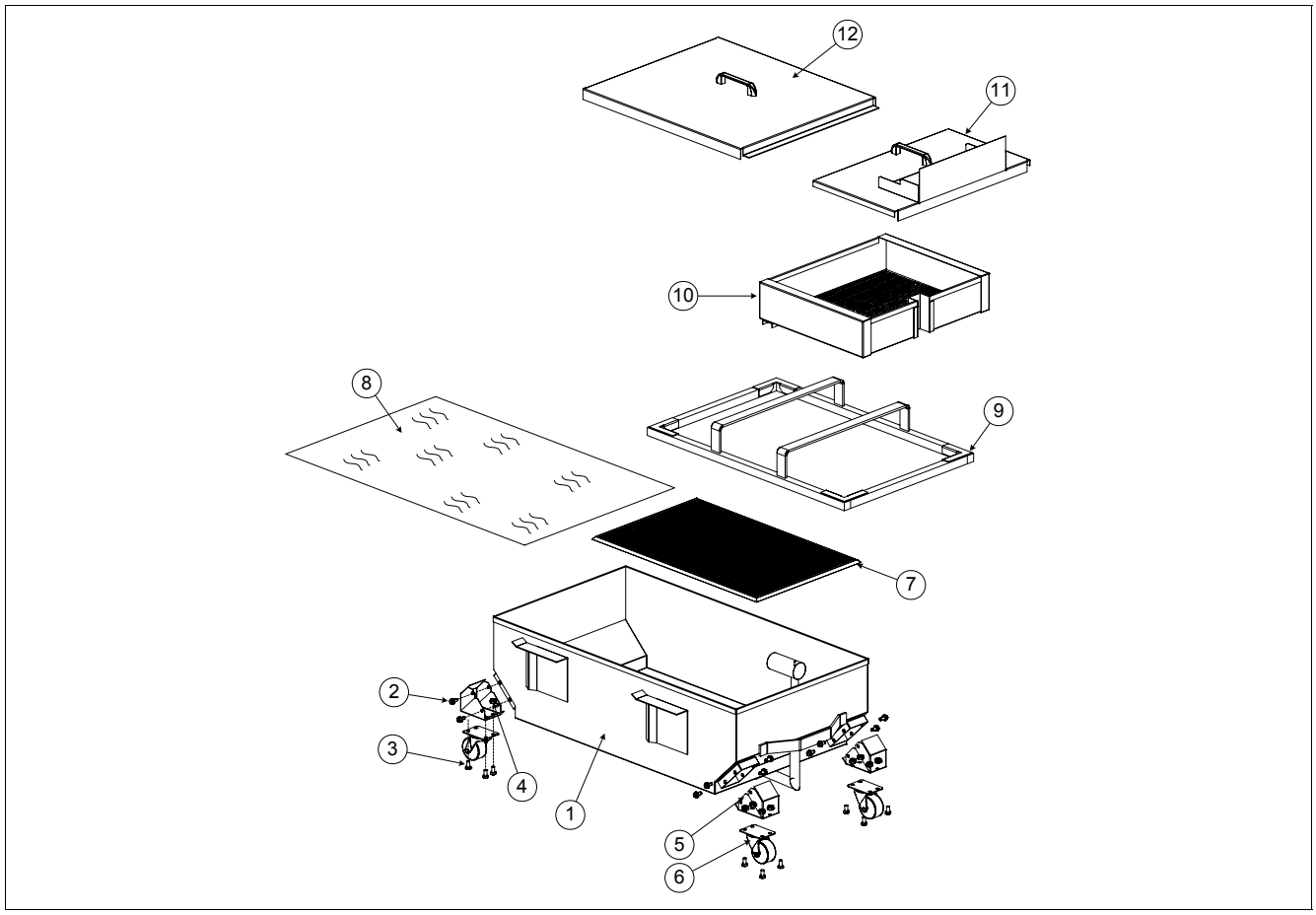
## 2.7.2 Oil Return and Oil Flush Components; Fryers with 3" Drains (cont.)

| ITEM | PART # | COMPONENT |
|---|---|---|
| | 106-4006 | **Microswitch Bracket Assembly, Oil Return** |
| 1 | 901-2772 | Handle, RF Left |
| 2 | 900-2935 | Retainer, Nut |
| 3 | 816-0220 | Insulation, RF Switch |
| 4 | 810-0278 | Ball Valve, ½" Oil Return |
| 5 | 826-1366 | Nut, 4-40 Keps hex w/ External Teeth (Pkg. of 25) |
| 6 | 807-2103 | Microswitch, Straight Lever (CE) |
| 7 | 200-6806 | Cover, Safety Switch |
| 8 | 106-3962 | Bracket Assembly, RF Switch |
| | 106-1225 | **Oil Suction Assembly** |
| 9 | 813-0062 | Elbow, 90º BM |
| 10 | 813-0173 | Union, ½" NPT 150# BM |
| 11 | 813-0654 | Nipple, TBE ½" NPT x 4" BM |
| 12 | 813-0674 | Nipple, TBE ½" NPT x 7.25" BM |
| 13 | 200-1230 | Bracket, Front male Manifold |
| | 106-0774 | **Suction Manifold Assembly** |
| 14 | 810-0697 | Disconnect, Male Suction Tube |
| 15 | 813-0608 | Coupling, ½" NPT BM Full |
| 16 | 823-3188 | Suction Manifold |
| | 106-0858 | **Oil Suction Start Fitting** |
| 17 | 813-0022 | Nipple, ½" NPT Close |
| 18 | 813-0463 | Plug, ½" Counter Sink |
| 19 | 813-0003 | Tee, ½" NPT BM |
| * | 210-8790 | Bracket, Oil Return/ Flush Retainer |
| * | 200-8929 | Handle, Oil Return |
| * | 200-9850 | Handle, Oil Return (Application Series "DF" Fryers) |
| * | 816-0548 | Cap, Oil Return Handle, Yellow |
| * | 816-0549 | Cap, Oil Return Handle, Blue |
| 20 | 810-2097 | Motor/Pump Combo, 120-230V |

* Not Illustrated

## 2.8 Under Fryer Filter (UFF) Components

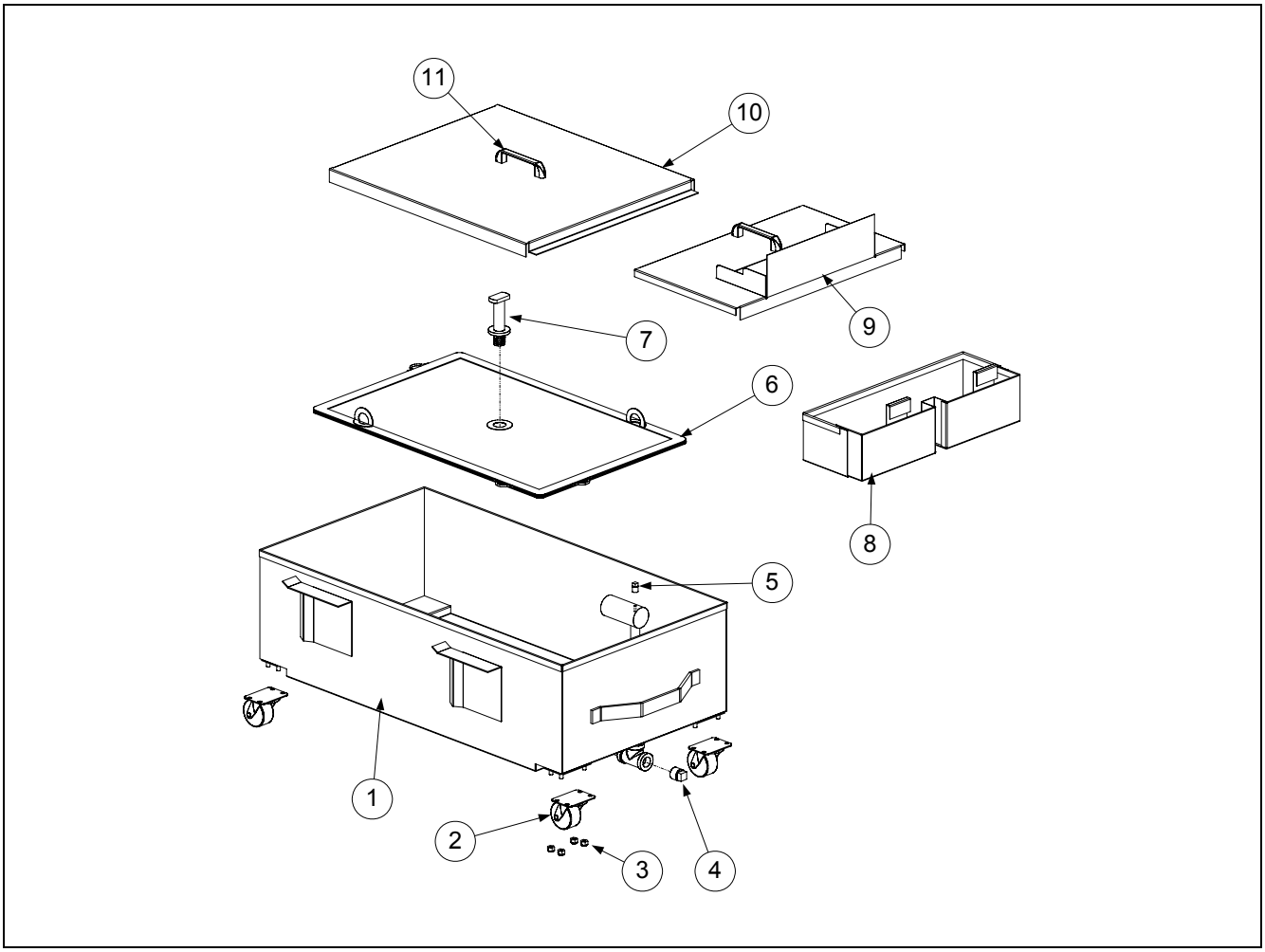
### 2.8.1 SM50 and SM60 Series Fryers (Except IHOP)




| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 823-3576 | Filter Pan- UFF 50 |
| * | 106-2115SP | Filter Pan Assembly- UFF 50 |
| * | 106-0749SP | Filter Pan Assembly- UFF 60 |
| 2 | 809-0805 | Screw, ¼"-20 x ½" |
| 3 | 809-0428 | Bolt, ¼"-20 x ½" Steel |
| 4 | 809-0820 | Nut, Oval Locking- ¼"-20 |
| 5 | 823-4794 | Insert, Caster |
| 6 | 810-2805 | Caster, 2"-Swivel |
| 7 | 823-3574 | Support Grid (Bottom Pan Screen)- UFF 50 |
| * | 823-3365 | Support Grid (Bottom Pan Screen)- UFF 60 |
| 8 | 803-0289 | Filter Paper, 22" x 34"- UFF 50/60 (100 Sheets) |
| 9 | 823-3573 | Hold-down Ring, Weighted- UFF 50 |
| * | 823-3361 | Hold-down Ring, Weighted- UFF 60 |
| 10 | 823-4320 | Crumb Basket, UFF 50/60 |
| 11 | 106-0752SP | Lid Assembly, Front- UFF 50/60 |
| 12 | 106-1755SP | Lid Assembly, Rear- UFF 50 |
| * | 106-0753SP | Lid Assembly, Rear- UFF 60 |

* Not Illustrated

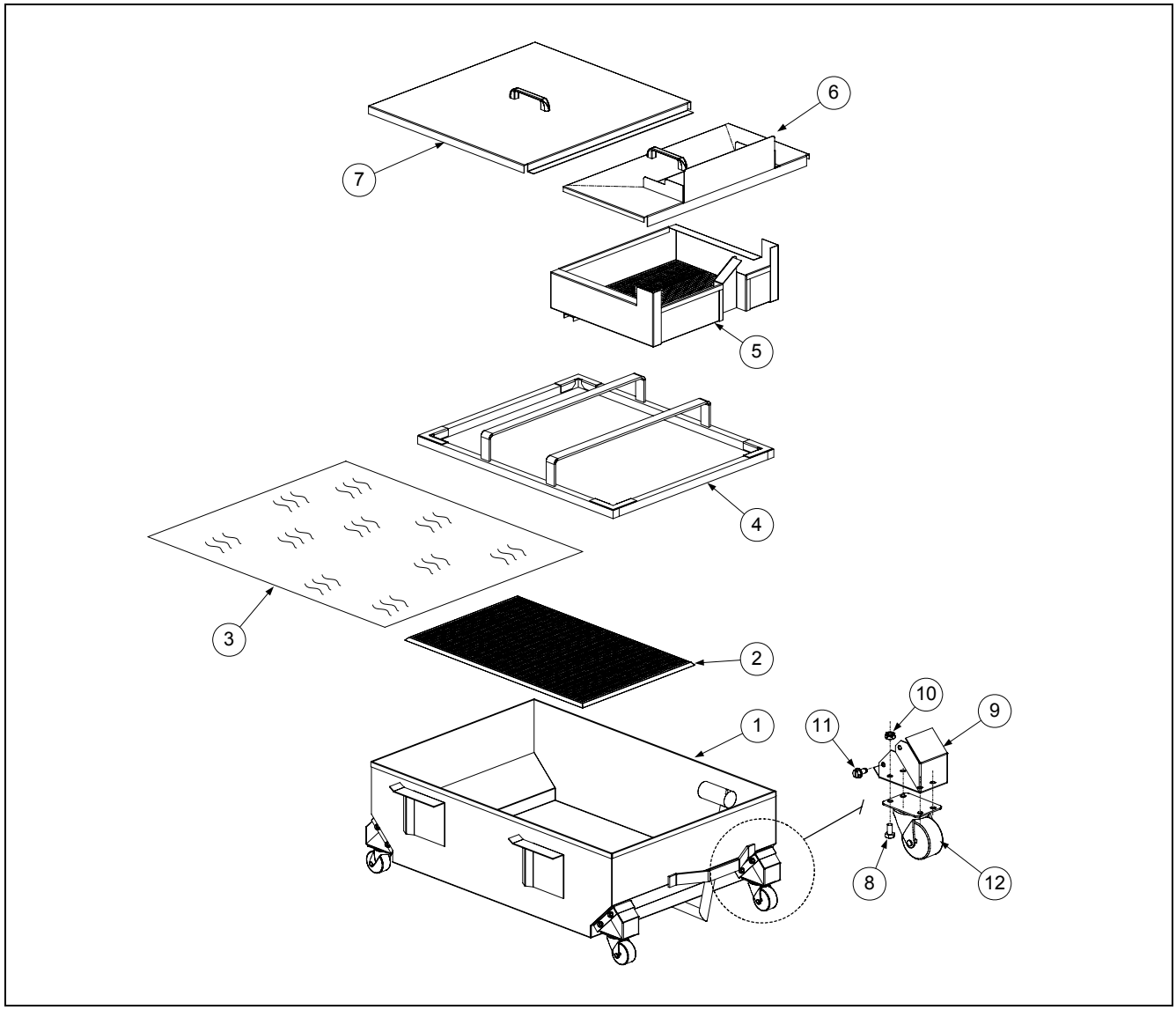
## 2.8.2 SM50 Series Fryers, IHOP UFF 50 with Filter Leaf




| ITEM | PART # | COMPONENT |
|---|---|---|
| | 106-2109SP | Filter Pan Assembly- UFF 50 IHOP (includes items 1-5) |
| 1 | 823-3703 | Filter Pan- UFF 50 IHOP |
| 2 | 810-2805 | Caster, 2"-Swivel |
| 3 | 809-0823 | Nut, Nylock ¼"-20 |
| 4 | 813-0336 | Plug, Pipe- S/S- ½" NPT |
| 5 | 813-0679 | Plug, ⅛" S/S Square Head |
| 6 | 810-2350 | Leaf, Filter- UFF 50 IHOP |
| 7 | 810-2351 | Handle, Filter Leaf Tee Fitting |
| 8 | 823-3872 | Crumb Basket, UFF 50 IHOP |
| 9 | 106-0752SP | Lid Assembly, Front- UFF 50 |
| 10 | 106-0753SP | Lid Assembly, Rear- UFF 60 |
| 11 | 810-0180 | Handle, Filter Lid- Front & Back |
| * | 809-0191 | Washer, ¼" Lock- Filter Lid Handle |
| * | 809-0918 | Screw, #10-24 x ½"- Filter Lid Handle |

* Not Illustrated

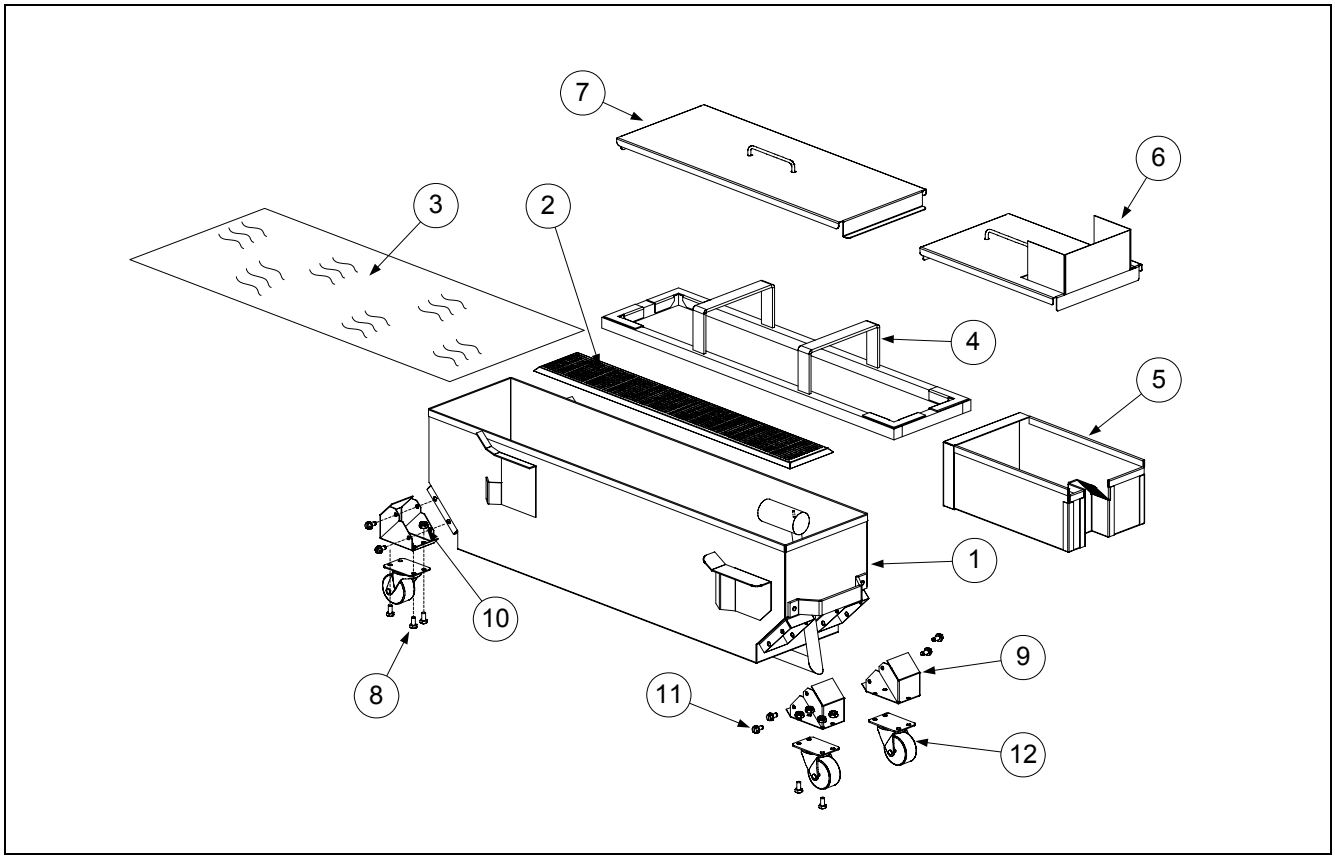
## 2.8.3 SM80 Series Fryers




| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 106-1584SP | Filter Pan, UFF 80 |
| 2 | 823-3365 | Support Grid (Bottom Pan Screen) (Use 823-4938 for Chili's) |
| 3 | 803-0303 | Filter Paper, 26" x 34" (100 Sheets) |
| 4 | 823-3439 | Hold-down Ring, Weighted |
| 5 | 823-3443 | Crumb Basket |
| 6 | 106-1587SP | Filter Pan Cover, Front |
| 7 | 106-1588SP | Filter Pan Cover, Back |
| 8 | 809-0428 | Bolt, ¼"-20 x ½" Steel |
| 9 | 823-4794 | Insert, Caster |
| 10 | 809-0820 | Nut, Oval Locking- ¼" -20 |
| 11 | 809-0805 | Screw, ¼"-20 x ½" |
| 12 | 810-2805 | Caster, 2" |

## 2.9 Single Under Fryer Filter (SUFF) Components

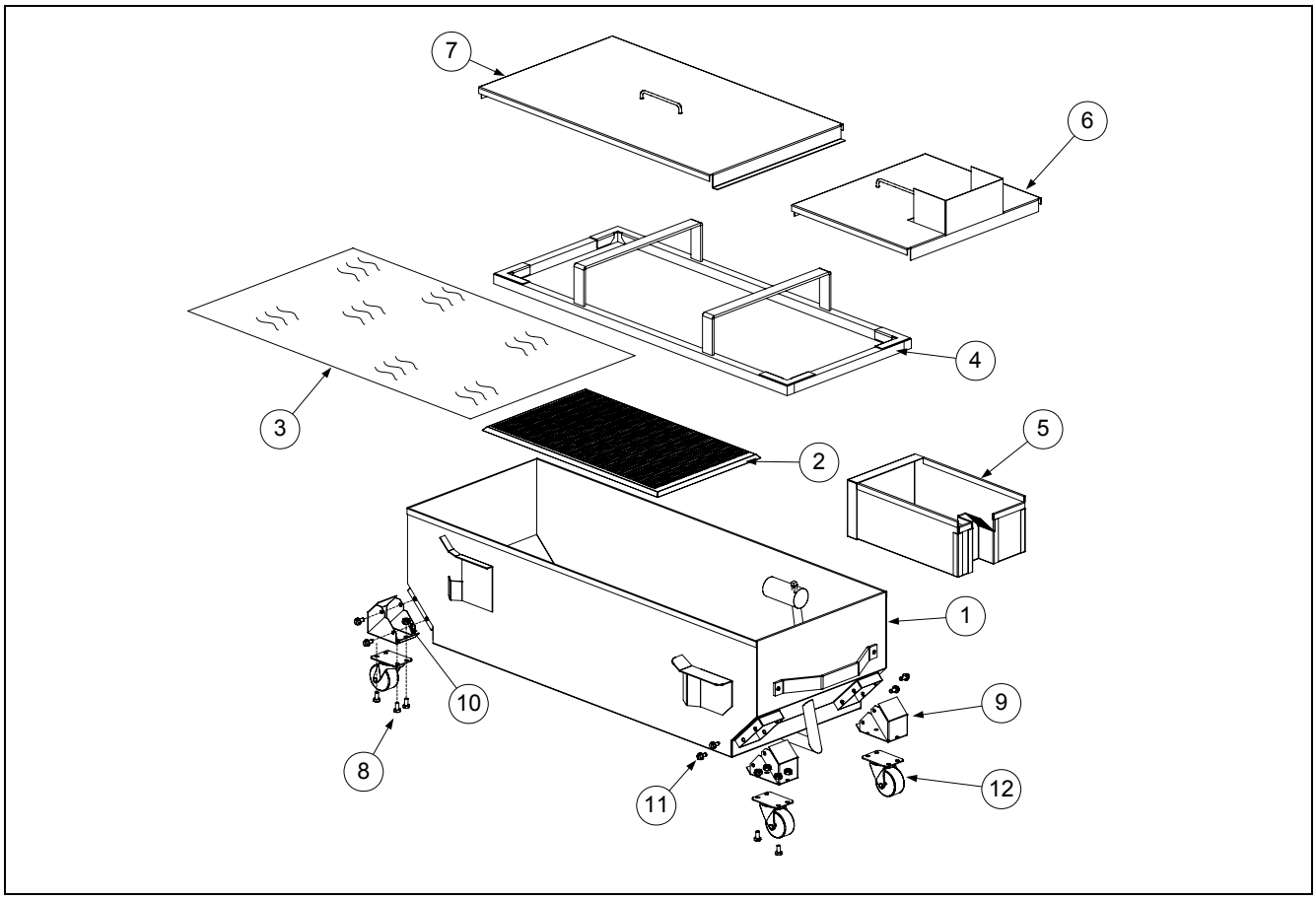
### 2.9.1 SM50 Series Fryers




| ITEM | PART # | COMPONENT |
|---|---|---|
| | 106-2257SP | Filter Pan Assembly SUFF 50 |
| 1 | 823-3796 | Filter Pan, SUFF 50 |
| * | 813-0684 | Plug, Hex Socket, ⅜" NPT |
| * | 813-0679 | Plug, ⅛" S/S Square Head (Female Disconnect) |
| 2 | 823-3790 | Support Grid (Bottom Pan Screen) |
| 3 | 803-0317 | Paper, Filter- 8-¼" x 25-¾" |
| 4 | 823-3795 | Hold-down Ring, Weighted |
| 5 | 823-3736 | Crumb Basket |
| 6 | 823-3797 | Filter Pan Cover, Front |
| 7 | 823-3798 | Filter Pan Cover, Back |
| 8 | 809-0428 | Bolt, ¼" -20 x ½" Steel |
| 9 | 823-4794 | Insert, Caster |
| 10 | 809-0820 | Nut, Oval Locking- ¼" -20 |
| 11 | 809-0805 | Screw, ¼" -20 x ½" |
| 12 | 810-2805 | Caster, 2" |

* Not Illustrated

## 2.9.2 SM60 and SM80 Series Fryers




| ITEM | PART # | COMPONENT |
|---|---|---|
| 1 | 823-3774 | Filter Pan, SUFF 60 (Use 106-2228SP for Assembly) |
| * | 823-3821 | Filter Pan, SUFF 80 (Use 106-2381SP for Assembly) |
| * | 813-0684 | Plug, Hex Socket, ⅜" NPT |
| * | 813-0679 | Plug, ⅛" S/S Square Head (Female Disconnect) |
| 2 | 823-3768 | Support Grid (Bottom Pan Screen) SUFF 60/80 |
| 3 | 803-0289 | Paper, Filter- 22" x 34" - SUFF 60/80 |
| 4 | 823-3768 | Hold-down Ring, Weighted- SUFF 60 |
| * | 823-3849 | Hold-down Ring, Weighted- SUFF 80 |
| 5 | 823-3736 | Crumb Basket- SUFF 60/80 |
| 6 | 823-3766 | Filter Pan Cover, Front- SUFF 60 |
| * | 823-3739 | Filter Pan Cover, Front- SUFF 80 |
| 7 | 823-3767 | Filter Pan Cover, Back- SUFF 60 |
| * | 823-3741 | Filter Pan Cover, Back- SUFF 80 |
| 8 | 809-0428 | Bolt, ¼" -20 x ½" Steel |
| 9 | 823-4794 | Insert, Caster |
| 10 | 809-0820 | Nut, Oval Locking- ¼"-20 |
| 11 | 809-0805 | Screw, ¼" -20 x ½" |
| 12 | 810-2805 | Caster, 2" |

* Not Illustrated

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Enodis®
One Company, Countless Solutions

**Dean, 8700 Line Avenue, PO Box 51000, Shreveport, Louisiana 71135-1000**
**Shipping Address: 8700 Line Avenue, Shreveport, Louisiana 71106**

**TEL 1-318-865-1711** **FAX (Parts) 1-318-327-3343** **FAX (Tech Support) 1-318-219-7135**

**SERVICE HOTLINE**
**1-800-551-8633**

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